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ABSTRACT

This curriculum guide contains a six-unit, two-level program combining animal science and veterinary care for youth club leaders and members in grades three through twelve. The Facilitator and Educator/Leader Introductions describe the program, the goals, and the students who will participate. The six lesson plans contain what the lesson is about, what the students will learn, materials needed, time needed, the activity, background for the teacher, educator/leader notes, and an activity sheet. The unit topics are as follows: (1) Attitudes and responsibilities towards animals and food production that promote animal well-being and product quality; (2) animal handling and exhibition promoting animal well-being and product quality; (3) housing livestock to promote animal well-being and product quality; (4) livestock feeds and feeding to promote animal well-being and product quality; (5) promoting animal well-being and product quality through proper animal health practices; and (6) public perception of animal agriculture. Evaluation tools included with the program are the following: (1) advancement program guides for the educator and youths describing skill levels that must be gained to complete each level; (2) fair checklists for the livestock department at the local fair; (3) packer carcass evaluation forms; and (4) exhibitor checklists to provide youths with immediate feedback on animal care. (SLR)

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Educators'
Curriculum Guide

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QUALITY ASSURANCE AND ANIMAL CARE
YOUTH EDUCATION PROGRAM

Quality Assurance and Animal Care: Youth Education Program
This material is based upon work supported by Extension Service, United States Department of Agriculture, under special project number 93-EFSQ-4096.

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QUALITY ASSURANCE AND ANIMAL CARE

YOUTH EDUCATION PROGRAM

Educators' Curriculum Guide

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FOREWORD

These materials were developed using the Exploratory Learning Model and the Scientific processes to help students learn in an exciting hands-on and exploratory manner. Exploratory learning is expressed as a process that encourages youth to EXPLORE, REFLECT, and APPLY knowledge.

The program materials reinforce that science is not just a collection of facts. Science is observing, comparing, relating, inferring, and applying knowledge and information. The activities of this program teach students - trying, failing, and trying again - that science also involves trial and error.

This unique educational program has resulted from the combined efforts of personnel at Oregon State University, The Ohio State University, and Washington State University while conducting programs for the USDA-ES Food Safety and Quality National Initiative. This material is based upon work supported by the Extension Service, United States Department of Agriculture, under special project number 93-EFSQ-1-4096.

This curriculum was developed by Washington State University, The Ohio State University , and Oregon State University with funding from Extension Service, USDA, under special project number 93-EFSQ-1-4096.

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Curriculum Guide

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Facilitator Introduction

Quality Assurance and Animal Care: Youth Education Program

INTRODUCTION

This program is a combined animal science and veterinary curriculum designed for use by youth club leaders and members. In addition to educational material, program evaluation tools are included to evaluate the successfulness of this program. Evaluation materials are designed to be collected from extension faculty, club leaders or agricultural education instructors, fair personnel, and processing plant personnel.

DESCRIPTION OF THE CURRICULUM

The *Quality Assurance and Animal Care: Youth Education Program* is an animal science curriculum for youths in grades three through twelve. It consists of the facilitator introduction, educator/leader guide, videotapes, skillathons, and evaluation materials. Each educator/leader guide includes background information, experiential (hands-on) activities, discussion questions, and video segments. The educator/leader guide has six units each divided into two levels. The first level teaches a basic understanding appropriate for all grade levels. The second level contains concepts designed for more advanced youths. The six units are:

- Attitudes and Responsibilities towards Animals and Food Production which Promote Animal Well-Being and Product Quality
- Animal Handling and Exhibition Promoting Animal Well-Being and Product Quality
- Housing Livestock to Promote Animal Well-Being and Product Quality
- Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality
- Animal Health Practices to Promote Animal Well-Being and Product Quality
- Product Quality, Public Perceptions, and Public Interactions

The evaluation tools included with the program are:

Advancement Program Guides – These are included for both the educator/leader and youths in the program. The guides describe specific skills youths must gain in order to complete each level of the program. The number of youths participating in the program is identified. Their level of knowledge concerning the critical control points that provide consumers with wholesome, high quality products and assure animal well-being is also identified.

Fair Checklists – Fair score sheets should be provided to the livestock department at your local fair. These sheets allow the fair's large animal superintendent to rate the application of humane care and quality assurance principles by exhibitors, parents, fair personnel, and judges in each livestock and dairy department.

Packer Carcass Evaluation Forms – These forms allow the packer to summarize the quality of the carcasses from animals exhibited at your fair. In addition to USDA carcass quality and yield information, this evaluation form provides information on residue violations, unacceptable hides and pelts, and avoidable carcass defects (bruises, injection site lesions, dark cutting beef, PSE pork, residual hair on pork carcasses, etc.).

Exhibitor Checklists – These lists are used by exhibitors prior to and during the show. They provide youths with immediate feedback on the level of animal care and quality assurance. Factors that impact quality and animal well-being are listed on a sheet. As youths carry out listed practices they check them off. Besides reminding youths of proper animal care, these lists also educate the public about animal care and about how young people are involved in assuring quality and animal well-being.

THE FACILITATOR

You, the youth educator, are key in making the *Quality Assurance and Animal Care: Youth Education Program* work. Your task is to develop a team of community members whose involvement in the program is necessary for meeting the program goal of increasing well-being and animal product safety.

We suggest the following steps to construct your team:

Step 1

Invite your local Extension Agent, FFA advisors, livestock leaders, fair's large animal superintendents, and meat packers to an introductory planning meeting.

You may want to introduce the program by showing the introductory video conference tape (your state 4-H specialist should have a copy).

Once you have introduced the program to your team, lead a discussion about the program:

- Do you see a need for the program in our county/area?
- How do you want to be included in initiating this curriculum into our animal science youth programs?
- Should we require some level of involvement in the program as a prerequisite for showing at our fair? If so, at what level?

At this meeting, hand out all or some of the materials to the team members. Team members need the following materials:

- Packers - score sheets
- Fair large animal superintendents - checklists
- Extension agent, FFA advisors, livestock leaders - educator/leader guides, exhibitor checklist, advancement guides

Develop a time line for the program to be implemented in your area. All of the team members should have a role in developing these goals.

- Participate in orientation and training
- Obtain curriculum and videos
- Review materials
- Hold introductory meeting
  - ☐ Orient volunteer leaders
  - ☐ Orient FFA advisors
  - ☐ Orient fair management
- Talk to packer(s)
- Train leaders and FFA advisors

  Follow up with leaders and advisors
  - ☐ How are lessons proceeding?
  - ☐ Are they using advancement materials?

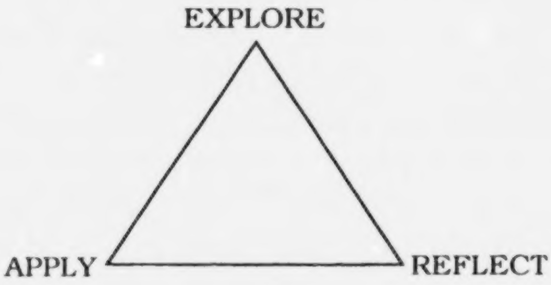
  Prepare for fair with
  - ☐ Livestock superintendent
  - ☐ Leaders
  - ☐ Advisors
  - ☐ Packers
  - ☐ Distribution of checklists

GO TO THE FAIR!

TEACHING PHILOSOPHY

Young people obtain knowledge through experience-based and exploratory learning processes in this project. Studies show that such experience-based, action-oriented learning has the greatest long-range impact on the learner.

Exploratory learning encourages youths to *EXPLORE*, *REFLECT*, and *APPLY* knowledge.



Explore an Activity

Youths "**explore**" and learn when they are involved in a hands-on learning activity. As an example, the activity could be judging water quality.

Reflect on the Activity

Youths "**reflect**" on the activity when they share and think about the activity. To do this the educator/leader would ask the students the following questions about the experience: What did they observe about the different samples of water? What did the water taste like? Did the lemon make the water taste better? How much water do their animals drink? How did they feel about the experience?

Apply the Activity

To complete the learning process youths must "**apply**" what they have learned to everyday life. For this application the educator/leader would ask the following questions: What have you learned today? How does not drinking enough water affect the well-being of your animal? How can you help make sure your animal continues to drink enough water at the show?

This process can turn any experience, good or bad, into a learning experience. To make this process work effectively, young people must understand how they can apply the results of the activities and the knowledge they have discovered.

In each lesson there is a triangle (△) in the margin to indicate each step in the Exploratory Learning Model--Explore - Reflect - Apply. The Exploratory Learning Model is one way of teaching science.

WHAT IS SCIENCE?

Science is not just a collection of facts. Facts are a part of science. We all need to know some basic scientific information: water freezes at 32 degrees Fahrenheit (or zero degrees Celsius); the earth moves around the sun; all animals need protein for growth. But science is much more. Science is observing, communicating, organizing, comparing, relating, inferring, and applying. The Exploratory Learning Model and scientific processes work together to help youths learn:

Explore:
- *Observing*
- *Communicating*
- *Organizing*

Reflect:
- *Comparing*
- *Relating*

Apply:
- *Inferring*
- *Applying*

Observing
The main route to knowledge is through observing, using all the senses. This process is a distinct one by which people come to know about the characteristics of objects and their interactions.

Communicating
Objects, names and events are described by people so that they can tell others about them. One can learn more about a greater range of information through communication.

Organizing
Knowledge of principles and laws is gained by systematically compiling, classifying, and ordering observed and compared data. Bodies of knowledge grow from a long-term organizing process.

Comparing
Through comparisons people systematically examine objects and events in terms of similarities and differences. By comparing the known to something unknown, one gains knowledge about the unknown. All measurements are a form of comparing.

Inferring
This is a process of realizing ideas that are not directly observable. It leads to predictive explanations for simple and complex phenomena.

Relating
Concrete and abstract ideas are woven together to test or explain phenomena. Hypothetical-deductive reasoning, graphing coordinates, managing variables, and comparing effects of one variable on another help people learn the major concepts of science.

Applying
Applying knowledge is using it. Inventing, creating, problem solving, and determining probabilities are ways of using information that lead to gaining further knowledge.

Science also involves trial and error – trying, failing, and trying again. Science does *not* provide all the answers. It requires us to be skeptical so that our scientific "conclusions" can be modified or changed altogether as we make new discoveries.

SCIENCE IS QUESTIONING AND LISTENING

Encourage youths to ask questions. A friend once asked Isidor I. Rabi, a Nobel prize winner in physics, "Why did you become a scientist, rather than a doctor, lawyer, or businessman, like the other immigrant kids in your neighborhood?" Rabi responded:

> *My mother made me a scientist without ever intending it. Every other mother in Brooklyn would ask her child after school: "So? Did you learn anything today?" But not my mother. She always asked me a different question. "Izzy," she would say, "did you ask a good question today?" That difference – asking good questions – made me become a scientist!*

If we cannot answer all of our youths' questions, that's all right--no one has all the answers, even scientists. And youths don't need lengthy, detailed answers to all questions. We can propose answers, test them out, and check them with someone else.

Educator/Leader Introduction

Quality Assurance and Animal Care: Youth Education Program

INTRODUCTION

This program is designed for use by youth club leaders and members. Educational material in the program includes a educator/leader guide, videotapes, and skillathon materials. In addition, program evaluation tools intended to evaluate the success of this program are included. Evaluation materials will be collected from extension faculty, club leaders or agricultural education instructors, fair personnel, and processing plant personnel.

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Each meeting plan includes background information, experiential (hands-on) activities, discussion questions, and video segments.

THE EDUCATOR AND LEADER

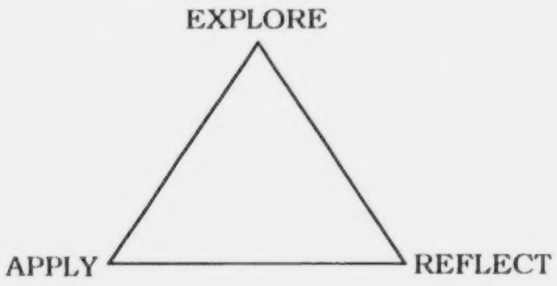
You, the educator/leader, are key in making this program work. Your enthusiasm and desire to help each youth grow and develop in a positive learning environment will make the curriculum a success.

Although the program is outlined in some detail, feel free to adjust the activities to meet the needs of your group.

TEACHING PHILOSOPHY

Youths obtain knowledge through experienced-based and exploratory learning processes in the project. Studies show that such experience-based, action-oriented learning has the greatest long-range impact on the learner.

Exploratory learning encourages youths to *EXPLORE*, *REFLECT*, and *APPLY* knowledge.



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Explore:
- *Observing*
- *Communicating*
- *Organizing*

Reflect:
- *Comparing*
- *Relating*

Apply:
- *Inferring*
- *Applying*

Observing
The main route to knowledge is through observing, using all the senses. This process is a distinct one by which people come to know about the characteristics of objects and their interactions.

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If we cannot answer all of our youths' questions, that's all right—no one has all the answers, even scientists. And youths don't need lengthy, detailed answers to all questions. We can propose answers, test them out, and check them with someone else.

LIFE SKILLS

The 4-H Youth Development Program and the Agricultural Education program help youths develop life skills that will enable them to become productive citizens of society. Life skills include communicating and interacting effectively, making sound decisions, learning practical skills for living, and developing a positive self-concept. In this curriculum we introduce life skills using the scientific method mentioned above. Therefore, youths develop life skills as they experience and understand the processes of science.

The success of 4-H and Agricultural Education in developing these life skills depends on effective interaction between youths and their leaders or educators. This relationship is the most important part of 4-H and Vocational Agriculture.

In this curriculum we introduce and teach life skills using the Exploratory Learning Model and the scientific process in each lesson.

UNDERSTANDING THE BASIC NEEDS OF YOUNG PEOPLE

Belonging

The desire to belong is natural. It brings young people in contact with others. Belonging to a group helps young people grow because part of their feeling of personal worth is gained from what others think of them.

Independence

A sign of growing up is becoming independent of parents. The youth's desire to be independent is often challenging to parents, educators, and leaders, but all healthy boys and girls experience it. Youths show their need for independence through impatience with adult leaders' or teachers' guidance and a preference for making up their own minds.

Achievement

Youths want to know that their efforts are worthwhile and appreciated. Projects should keep pace with the abilities of group members, bearing in mind that individual rates of achievement will vary. Include activities that require them to do things for others as well as themselves.

New Experiences

Young children need and want to be active. They require new and different experiences to stretch their horizons.

Affection

Affection or love is essential to personality development. Young children need to know that they are wanted and loved unconditionally.

YOUR INTRIGUING STUDENTS

Physical Growth

Physical growth in youths from middle school to high school varies drastically with age. Growth in middle school children (ages 9-11) is rather slow for most children. Youths at this age enjoy physical involvement. Projects that involve doing or making something are most successful.

From young teens to young adults youths experience growth spurts coinciding with the onset of puberty. The rapid changes in physical appearance may make young teens uncomfortable with their appearance. By the middle teens (age 15-17) most are comfortable with the changes in their bodies and know their own abilities and talents. Some talents are perfected at this stage (e.g., athletic talent) and new skills such as driving a car serve to move teens farther away from the family and into the community as independent people.

Growth in Thinking

Middle school youth begin to think logically and symbolically. However, they still think in terms of concrete objects and can handle ideas better if they are related to something they can *do* or experience with their senses. As middle school children begin to deal with ideas, they think of things as black or white. Something is either right or wrong. There is very little middle ground. Youths at this stage want to know how much they have improved and what they should do better next time.

Young teens (age 12-14) move from concrete to more abstract thinking. However, they still tend to think in all-or-nothing terms. Ready-made solutions from adults are often rejected in favor of young teens finding solutions on their own. Leaders and teachers who provide supervision without interference can have a great influence on young teens. Young teens can be very self-conscious, and a smaller group is usually less intimidating.

Middle teens are beginning to think about the future and make realistic plans. At this stage youths are mastering abstract thinking. They still have difficulty understanding compromise, however, and may label adult efforts to cope with the inconstancies of life as "hypocrisy." In middle teen years teens can initiate and carry out their own tasks without supervision. Projects requiring research and creativity give these teens the opportunity to demonstrate to themselves and others how much they have learned and how much they can accomplish on their own.

Social Growth

Middle school youths are beginning to identify with peers, although they still look to an adult for guidance. At this stage, they still have difficulty understanding another person's thinking; however, they are beginning to discover the benefits of making other people happy. They begin to develop an "I'll scratch your back if you scratch mine" philosophy, but near the end of this age group they begin to realize the benefits of pleasing others apart from immediate self-reward. Toward the end of this age range, youths are ready to take responsibility for their own actions. Decision-making skills are developed as the leader/teacher moves away from dictating directions to giving reassurance and support.

Young teens are becoming less dependent on parents. They enjoy participating in activities away from home. Providing young teens with opportunities to feel at ease with members of the opposite sex is an important function of group and social activities.

Middle teen relationship skills are usually well-developed and friendships formed at this stage are often sincere, close, and long-lasting. Teens in this age group want to belong to a group, but want be recognized as unique individuals within that group. Leader/teacher relationships with these teens move from that of director/follower to advisor/independent worker. Consistent treatment from adults is important even though teens may act like adults one day and children the next.

Emotional Growth

Middle school children have a strong need to feel accepted and worthwhile. Emphasize successes, even small ones, and minimize failures. Don't compare children with each other. It tends to erode self-confidence. Additionally, it can cause problems in dealing with peers at a time when they are trying to build friendships. Compare individual past performance to present performance.

As puberty approaches, young people's emotions begin the roller coaster ride that will characterize them throughout their adolescence. Changes in hormones contribute to the mood swings, as do changes in thinking. Young teens are presented with the biggest challenge to their self-concept. Spending time with adults who are accepting and willing to talk about values and morals has a lasting effect on young people. This is a time for adults to help with self-knowledge and self-discovering activities. Be especially careful at this age to not embarrass the young teen. Activities that provide good things for others and demonstrate the teen's growing sense of responsibility are ideal.

Two important emotional goals of the middle teen years are independence and identity, although neither will be achieved completely at this time. Middle teens are learning to cooperate with others on an adult level. Activities filled with "busy work" or meaningless activities will cause these teens to lose patience and interest. Learning to interact with members of the opposite sex may preoccupy these teens. Unsettled emotions may cause the teen to be stormy or withdrawn at times. In general, though, they will pride themselves on an increased ability to be responsible.

CURRICULUM GOALS AND OBJECTIVES

Participation in the *Quality Assurance and Animal Care: Youth Education Program* will ensure:

- Youths will humanely care for, feed, manage, show, fit, and market animals to guarantee a quality food product that is wholesome for consumers.
- Youths will learn that humane animal care is essential to providing a quality, wholesome product.

LESSON PLAN FORMAT

The general format of all the lesson plans follows. All units in the program do not need to be taught consecutively, but each level does. Still, we suggest that Unit 1 (Attitudes and Responsibilities towards Animals and Food Production which Promote Animal Well-Being and Product Quality) be completed first and Unit 6 (Product Quality, Public Perceptions, and Public Interactions) should be completed last.

This Lesson Is About

This section tells leaders/teachers what skills or competencies youths will gain from the exercises associated with the lesson.

What Youths Will Learn

This section identifies what the youths will learn about the project and about themselves. It relates to the goals and objectives.

Materials Needed

This section lists all the materials the leader will need to complete the activities.

Time Needed

This identifies the suggested time frame for completing the lesson.

Activity

This describes, step-by-step, how to complete the activity while involving the youths in the process.

What Do I Need to Know?

Needed background information is given for the leader to teach the activity.

Educator/Leader Notes

This section allows a space for the educator/leader to make notes and provides pertinent information on how to lead the lesson.

Activity Sheet

This section describes how to complete the appropriate activity, critical questions to ask, and critical answers to look for.

Youth Advancement Program Guide

Level 1 and Level 2

YOUTH ADVANCEMENT PROGRAM

Include the Advancement Program as part of the youths' project records. The basic advancement program is divided into six units, with all tasks required in each unit. All units do not need to be completed consecutively, but each level does. However, Unit 1 (Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality) should be completed first and Unit 6 (Product Quality, Public Perceptions, and Public Interactions) should be completed last. You may complete Units 2-5 in whatever order best suits your situation. Youths may practice tasks for Level 2 of the program while they are working on tasks for Level 1. But, they cannot complete tasks in Level 2 until they have completed Level 1. The information to complete these units is contained in the educator/leader guide and corresponding videotapes and skillathons.

The Advancement Program allows young people to work at their own pace and have opportunities for immediate success. As each task is completed, initial and date the task. When an individual has completed the tasks for each unit, he or she qualifies for an advancement certificate for that step.

Youth Advancement Program

Unit 1

Tasks	Date Passed	Approved By
1. Develop an understanding of your beliefs about animals.		
2. Identify five humane treatments of animals.		
3. Identify five inhumane treatments of animals.		
4. Present an oral report explaining product quality.		

Unit 2

Tasks	Date Passed	Approved By
1. Identify the four areas of stress.		
2. Identify factors that could cause stress in your project animal.		

Unit 3

Tasks	Date Passed	Approved By
1. Identify the space requirement for your project animal(s).		
2. Identify the reason for a minimum space requirement.		
3. Catalog the different types of bedding in order from the most absorbent to the least absorbent.		
4. Identify at least one method to properly dispose of animal waste.		
5. Demonstrate how to build a compost pile.		

Youth Advancement Program

Unit 4

Tasks	Date Passed	Approved By
1. Identify the major ingredients in your project animal's feed and pet's feed (or in breakfast cereal).		
2. Identify how to properly store feed for a project animal.		
3. Demonstrate that you store your project animal's feed properly.		
4. Identify three ways to avoid feed contamination.		
5. Calculate the amount of water that your project animal drinks in 1) one day, 2) one week, and 3) one month.		

Unit 5

Tasks	Date Passed	Approved By
1. Identify two different places where drug labels are found.		
2. Identify the following components from a drug label:		
Expiration date		
Storage directions		
Species compound is approved for		
Withdrawal time		
Directions for use		

Youth Advancement Program

Unit 6

Tasks	Date Passed	Approved By
1. Help to construct an educational display for the local fair.	________	________
2. Tell how you helped construct the educational display.	________	________

Level 1 Completed by__________________ (Name/Date) certified by__________________ (Name/Date)

Youth Advancement Program

Unit 1

Tasks	Date Passed	Approved By
1. Discuss differences between animal rights and animal welfare.		
2. Identify who your resources are, and how they can help you raise your project animal.		

Unit 2

Tasks	Date Passed	Approved By
1. Demonstrate the location of your blind spot and flight zone.		
2. Explain how you used the animal's balance point to make it move.		

Unit 3

Tasks	Date Passed	Approved By
1. Identify the comfort zone for your project animal(s).		
2. Develop a plan to modify your animal's housing in order to maximize its comfort.		

Unit 4

Tasks	Date Passed	Approved By
1. Survey your pasture and identify any plants that are poisonous to livestock.		
2. Design a plan to make sure that your project animal's feed does not become contaminated.		

Youth Advancement Program

Unit 5

Tasks	Date Passed	Approved By
1. Demonstrate proper preparation of an injection site.	________	________
2. Demonstrate how to correctly: 1) load a syringe, 2) perform an intramuscular and subcutaneous injection.	________	________
3. Catalog the drugs you have at home, including in the list the expiration dates, storage directions, and withdrawal times. Demonstrate that you are following label directions.	________	________

Unit 6

Tasks	Date Passed	Approved By
1. Identify a concern from the role play you performed.	________	________
2. Describe the role you played.	________	________
3. Identify an additional role that was played.	________	________
4. Describe the recommendation that was made by the community to the fair board during the role play.	________	________

Level 2 Completed by ________________ certified by ________________

(Name/Date) (Name/Date)

Exhibitor's Checklist

Quality Assurance and Animal Care: Youth Education Program

Exhibitor's Checklist

Pre-Show Management

______ Prepare an area before I get my animals.

______ Be aware of animals' comfort at all times.

______ Provide animals with a safe, clean, well-bedded area with plenty of space.

______ Provide animals shelter from sun, wind, and bad weather.

______ Provide fresh, clean water at all times.

______ To make sure animals drink enough water during the show, add a little molasses or a few drops of lemon juice to mask the taste of the water, starting about two weeks before the show. Then add it to the water at the show.

______ Feed animals regularly, with adequate amounts of a balanced diet.

______ Observe animals daily and get immediate treatment or veterinarian care for those needing it.

______ Mark animals for identification.

______ Keep good records on feeding and health care.

______ Have an animal health care program to prevent disease.

______ Castrate, dehorn, dock, etc. animals when they are young.

______ Use proper methods of treatment or vaccination.

______ Control both internal and external parasites.

______ Always use drugs, medicines and other animal health products as described on the label. Off-label use without a veterinarian's prescription is illegal.

______ Observe all withdrawal times.

______ Do not use products not cleared for use in meat animals such as Clenbuterol and injectable anabolic substances.

______ Do not use any product or practice to reduce the water content and weight of show animals before they are weighed. Diuretics are not allowed without a veterinarian's prescription and withdrawal time is a problem because they are usually used within a few days of slaughter.

______ Start training animals to be handled at a young age.

______ Do not do anything which may cause any unnecessary pain to the animal or that may cause bruising, scarring, or unnecessary stress.

____ Start preparing animals at least 30 to 60 days before the fair. This includes working with them daily and adjusting them to as many show conditions as possible. (This includes working around other animals, being tied or confined, using show equipment, and using the same feeding schedule as to be used during the show.)

____ Trim and shape hooves about three weeks before the show to allow time for the feet to toughen.

____ Sort and load animals safely. Using prods or equipment that may cause bruising or unnecessary stress is not recommended.

____ Use a safe, clean, well-ventilated method of getting animals to the show.

Show Management

____ Tie or pen animals with plenty of space to prevent crowding or fighting.

____ Provide enough clean bedding to make the animal comfortable and prevent bruising.

____ Remove everything from the pen area that may bruise or cut animals or exhibitors.

____ Remove the manure and waste regularly and take to a designated area.

____ Always provide fresh, clean water. Many digestive upsets result from not drinking enough water and can ultimately result in avoidable carcass defects.

____ Use approved blocking or fitting chutes that will not harm the animal or exhibitor.

____ Never leave animals alone in a blocking or fitting chute.

____ When grooming and fitting, avoid using harsh chemicals that may irritate your animal's skin or eyes.

____ Do not use tranquilizers and/or anesthetics to calm animals. Tranquilizers can only be used with a veterinarian's prescription since no tranquilizers or anesthetics are labeled for meat animal use.

____ During the show, I do not put unnecessary stress on the animals, or use physical force that will cause avoidable carcass defects such as bruises, and stress-related problems (dark cutting beef, pale soft and watery pork).

____ Provide plenty of feed and water until animals are removed from the show facilities.

____ Do not use electric prods.

____ Do not leave animals in the hot sun.

____ Tie or pen animals securely so they cannot escape and run loose on the fairgrounds.

Hogs

______ Do not use oil when fitting hogs for show. Oil decreases the animal's ability to cool down in hot weather and makes it harder to remove hair during processing.

______ Use showing bats, show canes, plastic pipes, or other approved showing devices to gently guide hogs. If these devices are used with force they will bruise the carcasses.

______ Complete levels I and II of the National Pork Producer's Quality Assurance Program.

Sheep

______ Do not leave sheep alone on fitting stand.

______ Protect closely shorn, washed lambs from flies. Closely shorn lambs are vulnerable to fly strike and short fleece (<5/8") also decreases the value of the pelt. Follow local show rules regarding fleece length.

Beef

______ Have a brand certificate for proof of ownership.

______ Have completed "certificate of permit" or "haul slip" when hauling cattle on public roads.

______ When selling a market steer through a Market Stock Sale complete the "certificate of permit" listing the County Fair Market Stock Sale on the line for destination (consigned to) and leave with beef superintendent.

______ Always adjust halters so they are properly fitted to give good control, but do not cut into the skin of the animal or interfere with the animal's ability to breathe.

______ Do not use pour-on insecticides as a "hair-set." This practice is very hazardous because a 30-45-day withdrawal period is required for most of these products.

Dairy

______ Do not inject any substances into the teat or udder for the purpose of filling or shaping parts of the mammary system.

______ Follow good milking practices to protect the cow's udder health. Milk a clean, dry udder with a properly operating milking system and dip teats with an approved teat dip after milking.

______ Complete the Milk and Dairy Cattle Quality Assurance Protocol.

______ Always adjust halters so they are properly fitted to give good control, but do not cut into the skin of the animal or interfere with the animal's ability to breathe.

Fair Checklist

Quality Assurance and Animal Care: Youth Education Program

Fair Checklist

Pre-Show Management

______ Make sure that clean, fresh water is easily accessible for exhibitors to fill water containers for their animals.

______ Provide adequate space and housing for the animals to prevent crowding or fighting.

______ Make provisions for manure and waste disposal.

______ Provide adequate show ring size, lighting, ventilation, and protection from severe weather.

______ Provide a good show ring surface that is free of rocks and holes: if bedding is used, provide sand, shavings, or materials that reduce dust, provide good footing (preventing slips and falls, especially when wet), and will be comfortable for exhibitors and animals.

______ Make sure that loading and unloading facilities are safe and adequate.

______ Establish a no-reweigh policy after animals have left the scales area to limit unethical practices to manipulate weight.

______ Provide a properly operating milking system for lactating cows. If the milking system is used only for a few days each year, check the vacuum pump, controller, and inflation.

______ Designate a person to serve as spokesperson for the show on animal rights/welfare issues.

______ Post the name and phone number of a person to contact for emergency veterinary care.

______ Designate a person to enforce animal care principles.

Show Management

______ Make sure exhibitors properly bed their animals.

______ Provide appropriate sanitizing solutions, paper towels, and teat dip in the milking facilities. Or ask exhibitors to bring their own.

______ Provide adequate, safe area for show preparation of animals, including washing facilities, grooming area, and show staging areas.

______ Provide lanes for movement of animals for the public's safety.

______ Provide adequate show ring facilities and implement procedures to reduce animal fighting or conditions that will cause injury or undue stress to animals or exhibitors.

______ Provide hog panels and ring personnel to help with unmanageable livestock.

_____ Tell exhibitors what they need to do during the show to ensure a high level of care for the show animals as follows:
    _____ Always provide adequate, fresh feed and water.
    _____ Care for and show animals in a manner that will prevent bruises, injury, and undue stress.
_____ Announce the person designated to enforce animal care principles.
_____ Introduce the show's spokesperson who will address animal rights/welfare issues to youth members, adult leaders, and parents.
_____ Review the show's animal welfare policies and define the procedures to follow if an individual is confronted.
_____ If you are confronted, direct the individual(s) to the show's/department's appointed animal rights/welfare spokesperson and focus on the positive aspects of youth programs. Stay calm, control yourself, and don't provoke an argument.
_____ Outline news media procedures. Before accepting interviews for TV, radio, or newspapers, ask about the intent of the interview, its content, and the questions to be asked. Ask to have the show's spokesperson in attendance to serve as a resource person.
_____ Ensure exhibitor compliance with animal care policies.

Overall Rating of the Department

_____ Definitely Needs Improvement
_____ Needs Some Improvement
_____ No Improvement Needed

Comments and Suggestions for Next Year

What things need improvement?

What things were satisfactory?

What activities, procedures, or actions were particularly noteworthy and should be encouraged next year?

Packer Carcass Evaluation Forms

Quality Assurance and Animal Care:
Youth Education Program

Packer Carcass Evaluation Form

Processing Plant:____

Carcass feedback information on market stock from the following:

____ (Fair or Show)

Total number of market stock animals evaluated from this fair/show:

________Steers _______Hogs ________Lambs

BEEF

Number of the carcasses with the following USDA Quality Grade:

________Prime ________Choice ______Select

________Standard

Number of carcasses with the following USDA Yield Grade:

_____ YG1 ______YG2 ______ YG3 ______YG4 ______ YG5

Number of carcasses with avoidable defects resulting from the following:

________Bruises _______ Abscesses/lesions ________Dark cutters

Most common location of the following:

___________________Bruises _________________Abscesses/lesions

_________ Number of livers condemned

Comments on hides:

HOGS

Number of carcasses with the following USDA Grade:

____USDA 1 ______USDA 2 ______USDA 3 ______USDA 4 ______ USDA 5

Number of carcasses with avoidable defects resulting from the following:

_______ Bruises _________ Abscesses/lesions _________ PSE

_______ Too dark and firm___________Residual hair

Most common location of the following:

_____________________ Bruises ____________________ Abscesses/lesions

________ Number of livers condemned

Comments on hides if skinned, or residual hair if dehaired.

LAMBS

Number of carcasses with the following USDA Quality Grade:

_______ Prime__________ Choice ________Good

Number of carcasses with the following USDA Yield Grade:

_____ YG1_________YG2 ________ YG3_________YG4 ________ YG5

Number of carcasses with avoidable defects resulting from the following:

_______ Bruises _________ Abscesses/lesions

_______ Inadequate fat cover (less than 0.10 fat)

Most common location of the following:

_____________________ Bruises ____________________ Abscesses/lesions

Comments on pelts:

Unit 1, Level 1

Educator/Leader Guide

Attitudes and Responsibilities Toward Animals and Food Production Which Promote Animal Well-Being and Product Quality

Total Quality Management (TQM) and the Responsibilities of a Livestock Project

Quality Assurance and Animal Care: Youth Education Program

J.R. Busboom, D.D. Nelson, J.A. Froseth, J.A. Newman, S.S. Whiteaker

Unit I: Attitudes and Responsibilities towards Animals and Food Production which Promote Animal Well-Being and Product Quality

Lesson Title: *Total Quality Management (TQM) and the Responsibilities of a Livestock Project*

This Lesson Is About: The responsibilities of a youth livestock producer, developing a TQM mind-set, and identifying current and potential problems in animal well-being.

What Youths Will Learn:

About the Subject:

- That a livestock project carries with it a responsibility to humanely care for, feed, show and market animals in a way that guarantees consumers a safe, high-quality food product.
- To develop a total quality management program that always keeps the end result in mind (focusing on your customers), using all of your resources (human, animal, and environmental) effectively and efficiently to produce a product that meets or exceeds your customers' expectations and to always try to improve.
- To identify current and potential problems with animal well-being that youths may have in raising and showing livestock, and to suggest changes in attitudes and behavior that will influence public perception, especially at fairs and shows.

About Themselves:

- That they are responsible for the well-being of their animals
- That they can and should improve themselves throughout their lives

Time Needed: 45 minutes

Life Skills:
Decision-making skills
Communication skills
Team-building skills

Materials Needed: Critical Point #1: "Starting with Quality"

What Do I Need To Know?	Educator/Leader Notes
A livestock or dairy project can be fun, but it also involves a great deal of responsibility. Exhibitors represent themselves, and their family, club, school, community, and the entire livestock industry. The fair and show ring are highly visible; youths can positively or negatively influence the impressions of hundreds or thousands of people. Youths also produce food people will eat. For example, the meat or milk from one animal often winds up in over 100 households. Clearly, producing a food animal is an important responsibility.	Have group view Critical Point #1: "Starting with Quality."
Total Quality Management (TQM) is a philosophy or an attitude that affects everything you do as an individual. For youths, it affects not just how they take care of their animals, but everything they do. It means they accept responsibility for their actions – it means they take pride in doing their best. In other words, they need to continually strive to learn how to do a better job in feeding and caring for their animals, producing a better end product, and becoming better students and better people.	
TQM involves developing a long-term perspective that emphasizes the needs and wants of customers. Youths should think of themselves as being in the food production business, not just the livestock production business. They need to accept the responsibility of producing a safe and wholesome product from an animal that has been humanely cared for. In terms of TQM, their goal is to produce a product that meets or exceeds the expectations of the person who purchases their animal. TQM also involves effectively using all available resources. Every operation has human, animal, and environmental resources for improving product quality.	
One aspect of TQM is quality assurance. Nationally, quality assurance is an integral part of most successful businesses today and the livestock industry is no exception. The objective of food animal quality assurance is to minimize or eliminate quality defects and ensure the production of a predictable, safe, and wholesome product. This means feeding the animal properly, using proper vaccine and antibiotic injection techniques, correctly using only Food and Drug Administration (FDA) approved vaccines and drugs and adhering to required withdrawal periods prior to processing the animal.	Write down important points for the group to see.

What Do I Need To Know?

To achieve sound quality assurance, one must also practice proper animal care because this directly influences product quality. For example, poorly designed facilities and equipment or incorrect handling can cause bruising while stress can cause very dark or very pale meat. Consumers of animal products are not only concerned about the quality, wholesomeness, and safety of the meat, milk and eggs they eat, but also want to be assured that the food animals were treated humanely. Concern for animal welfare or well-being has increased as farm animal production has became more intensive and confinement raising has grown in popularity. Many consumers equate intensive or confinement production with "Factory Farming." They may feel that such production methods are not "animal-friendly". Many feel we should return to the days of traditional animal husbandry. This would raise the cost of animal products and most U.S. consumers prefer cheap food.

Surveys show that about 80 percent of the American public believes that animals have "rights" but not that they have the right to life. Only 5 percent believe it is wrong to kill animals for food. Therefore, most people believe it is okay to use animals for the good of people if they are treated humanely. Furthermore, about 80 percent of the American public believes that most farm animals – except chickens and veal calves – are treated humanely at the present time. The American public should know that livestock producers treat their animals well. If not, the market for animal products and prices will decrease dramatically.

The term “animal welfare” refers to an animal's state of doing well; that is, it is healthy, fast growing, and reproduces normally. It is comfortable, free from pain and exhibits normal behavior for its species. In order for animals to do well, they require an adequate environment for physical and psychological health. All animals need the following:

- Adequate and clean air, water and feed.
- Safe and adequate housing.
- Enough variation and security in their living environment to prevent boredom or fear.
- Careful handling by people to avoid unnecessary suffering.

Educator/Leader Notes

Activities in this unit should be completed consecutively. Activities 1 and 2a should be completed at the first meeting and activities 2b and 3 at the next meeting.

Have the group participate in the activities entitled “Understanding Beliefs about Animals” (activity sheet 1, page 7) and “Understanding Quality” (activity sheet 2a, page 8) to illustrate the concepts of Animal Rights/Welfare and TQM.

What Do I Need To Know?

We must all be concerned for the well-being of animals. Such concern automatically qualifies each of us as an "animal welfarist" and we should be proud to be thought of as such. The animal welfare ethic holds that humans may use animals for their own benefit as long as the animals are treated humanely throughout their lives and humanely killed. Those who believe in animal welfare attempt to minimize pain to animals and treat them kindly at all times.

Believing in animal welfare is much different than believing in animal rights. The animal rights ethic holds that animals have the same rights and feelings as humans and that people may not use animals in any way. Many animal rights advocates believe that animals have the right to be all that they can be. Furthermore, many believe that humans have a duty to help animals obtain their rights. A few animal rightists demonstrate or commit acts of violence on behalf of animal rights issues.

Most livestock producers treat their animals humanely. However, there are exceptions, individuals who don't take their responsibility to animals seriously. Hence, there is considerable room for improvement. General areas of concern include the following:

- *Confinement rearing*
  - inadequate lighting
  - overcrowding or overly aggressive penmates
  - social isolation
  - poor air quality inside buildings
  - wet and slippery floors
  - lack of sanitation
  - boredom
- *Management procedures*
  - castration and dehorning of older animals
  - docking of tails when animals are older
  - branding
  - beak trimming
  - use of electric prods
  - rough handling and restraint
  - lack of high quality feed and water
  - inadequate exercise
  - poor animal identification
  - inadequate health programs

Educator/Leader Notes

Write down important points for the group to view.

What Do I Need To Know?

- *Physical environment*
  - cold, wet, drafty conditions
  - mud and deep snow
  - lack of shelter or protection from the elements
  - lack of bedding
  - flies and pests
  - overheating in summer
  - toxic gas levels in confinement
  - filthy, unsanitary conditions
- *Transportation and marketing*
  - crowding
  - exhaust fumes
  - temperature extremes
  - food and water deprivation
  - abuse and injury in loading and unloading
  - "downer" or non ambulatory animals in sale yards
  - rough handling
  - inhumane slaughter

Members of the U.S. public observe the way we treat animals at fairs and shows throughout the country. We do many things correctly that we can be proud of. But, do we always treat our animals humanely? Youths should consider that how they treat their animals will be perceived by various segments of the population. Are there things we do that might be considered inhumane? Could reasonable people be upset enough to withdraw their support of our shows and fairs?

Educator/Leader Notes

Have the group participate in activity 3 (page 12) entitled "Humane Treatment of Animals: Self-Assessment" to illustrate the concepts of animal welfare.

QUALITY ASSURANCE AND ANIMAL CARE

YOUTH EDUCATION PROGRAM

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 1: *Understanding Beliefs about Animals*

Materials Needed: Youth's parent(s), Youth Quality Interview Sheets, Activity Sheet 2a (Leader/Teacher).

Activity	**Dialogue for Critical Thinking**
In this activity, separate the youths into small groups of 3 to 7 kids. Parents should be present to support and help their children understand what will be happening. Engage the youths in the following discussion during the first lesson:	
E Discuss what raising an animal means. Suggest that they may develop emotional feelings about their animals much as they do about a pet.	***Communicating* E:** "In this project you (the child) will feed, care, and raise an animal (hog, lamb, steer, or dairy animal). You will spend a lot of time with it and it may become your friend or pet".
E Discuss showing an animal and selling it at the junior livestock auction.	***Communicating* E:** "You will have the opportunity to take the animal to the fair and to show it. If you raise a market animal (beef, hog, or lamb) you will be able to sell your market animal at the fair in the junior livestock auction."
E Follow this general discussion by a specific discussion of what this means to the youths and the animals.	
E Discuss what a junior livestock auction is all about.	***Communicating* E:** "At the fair you will show your animal in a market class (for instance: market lambs) and in a showmanship class (exemplify what this means by showing slides, pictures, or videos of these activities)."
E Talk about what this would mean (the animal is slaughtered). Have experienced youths describe their feelings when they had to sell their first project animals.	
E Finally, discuss raising a market animal for the fair. Let them know that it is all right if they do not want to raise a market animal for the fair. Instead, kids could raise companion animals such as cats, dogs, horses, or rabbits, or they could raise dairy replacement heifers and sell them to dairies.	***Communicating* E:** "Your animal is sold at auction and then taken and processed for food. The animals are processed into steaks, roasts, and chops."

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 2a: *Understanding Quality*

Materials Needed: Youth Quality Interview Sheets

Activity	**Dialogue for Critical Thinking**
After you have completed activity sheet 1, perform the following activity:	
Pair the younger youths with older youth members. This activity will have youths identify what quality is. E Briefly discuss quality (5-10 min.).	***Communicating*** **E:** Ask the youths to describe what they think quality is.
Then hand out the youth quality interview sheets (page 9).	***Comparing*** **R:** Do other people have different views about what quality is to them?
Have the pairs of youths write down the different people they want to interview who might view quality differently.	***Inferring*** **A :** Who might have different ideas of what quality is?
Tell the pairs of youths to interview these people before the next meeting so they can report to the rest of the group. The remainder of this activity will be completed at the second meeting and is titled activity sheet 2b "Understanding Quality" (page 11).	

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Youth Quality Interview Sheet

You may want to interview more than 3 customers.

Customer 1

Name ____________________

Age ____________________

Occupation ____________________

Suggested Questions

When you purchase a meat product, how do you define quality?

Is there anything else about a meat product that is important to you?

What factors affect your meat buying decisions?

Customer 2

Name ____________________

Age ____________________

Occupation ____________________

Suggested Questions

When you purchase a meat product, how do you define quality?

Is there anything else about a meat product that is important to you?

What factors affect your meat-buying decisions?

Customer 3

Name ______________________
Age ______________________
Occupation ______________________

Suggested Questions:

When you purchase a meat product, how do you define quality?

Is there anything else about a meat product that is important to you?

What factors affect your meat buying decisions?

Customer 4

Name ______________________
Age ______________________
Occupation ______________________

Suggested Questions

When you purchase a meat product, how do you define quality?

Is there anything else about a meat product that is important to you?

What factors affect your meat buying decisions?

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 2b: *Understanding Quality*

Materials Needed: Youth Quality Interview Sheets

<table>
<tr><th>Activity</th><th>Dialogue for Critical Thinking</th></tr>
<tr><td>This activity is a continuation of activity 2a which was introduced at the first meeting. The youth pairs should have interviewed at least three different people.</td><td></td></tr>
<tr><td>E Have the youths report the results of these interviews.
While the youths are reporting, write down the person interviewed (e.g., rabbi, grocer, parent, teacher) and their view of what quality is. An example format could be:</td><td><i>Communicating</i> E: What did the people you interviewed think quality was?</td></tr>
<tr><td><table>
<tr><th>Audience</th><th>View</th></tr>
<tr><td>Rabbi</td><td>Kosher</td></tr>
<tr><td>Pastor</td><td>Lots of marbling</td></tr>
<tr><td>Teacher</td><td>No external fat</td></tr>
<tr><td>Parent</td><td>Little marbling, no drug residues</td></tr>
<tr><td>Commercial Producer</td><td>No lesions, choice</td></tr>
<tr><td>Livestock Judge</td><td>High quality, muscular, lean structurally correct</td></tr>
</table></td><td><i>Comparing</i> R: Do all of the audiences have the same view of quality?
What views are the same? What views didn't you think of? What views are the same as yours? Which ones are different?
<i>Relating</i> R: How does knowing these different views help you to produce a better product?</td></tr>
<tr><td>E Discuss the results of the list.</td><td></td></tr>
</table>

Activity	Dialogue for Critical Thinking
E Include in the discussion about the different customer perceptions of quality a discussion of how TQM can help them meet these customer expectations.	***Inferring* A*:*** How many of these potential customers might consume the animal that you produce? ***Applying* A*:*** Does knowing what your customers want help you to produce a better product? Could the TQM philosophy help you meet your customers' desires?

Critical Answers for Dialogue Questions

- All audiences (people) do not have the same view of what quality is.
- What is most important to one person may not be what is most important to another.
- Knowing what your potential customers want is the key in producing a quality product.
- Since many different people will consume the product you produce, it is important to meet as many of their expectations as you can.
- TQM emphasizes production of a product that always meets or exceeds your customers' expectations.

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 3: *Humane Treatment of Animals: Self-Assessment*

Members of the U.S. public observe the way youths and adult leaders treat our animals at fairs and shows throughout the country. We do many things correctly that we can be proud of. But, do we always treat our animals humanely? Are there things we do that might be considered inhumane? Might reasonable people be upset enough to withdraw their support of our shows and fairs?

Materials Needed: Show canes or bats (one for each pair of youths); flip chart, chalkboard, or overhead projector (for recording observations)

Activity	Dialogue for Critical Thinking
△E Ask for volunteers or assign a person to act as a recorder for ideas presented in the group discussion.	***Communicating*** △E**:** What things did you list?
As a group, discuss practices which represent humane treatment of our pet animals. After listing five or more humane practices, lead a discussion about practices that youth and/or adults sometimes do that may be considered inappropriate or inhumane treatment of pets. Think of those things that you have seen or been aware of that you would be ashamed of if a video tape of you doing them were to be played on the evening news of your local TV station.	***Relating, Applying*** △R △A**:** How do the things you listed affect public perceptions?
After discussing treatment of pet animals, lead the group in a discussion of practices that most of us do before and at the fair or show that represent humane treatment of our livestock animals. Once humane treatment of livestock animals has been discussed, lead a discussion about practices that may be considered inappropriate or inhumane treatment of farm animals. Again, think of those things that you have seen or known about that you would be ashamed of if a videotape of you doing them were to be played on the evening news of your local TV station.	***Communicating*** △E**:** What things did you list? ***Relating, Applying*** △R △A**:** How do the things you listed affect public perceptions?

Critical Answers for Dialogue Questions: Humane Practices

- Feed a balanced ration.
- Provide plenty of clean drinking water.
- Prepare facilities before getting my animal.
- Keep animal in a warm dry place that is adequately ventilated and well-bedded.
- Start training animals to be handled at a young age, never do the training at the show or fair.
- Castrate, dehorn, and dock animals when they are young.
- Observe animals daily and get treatment for those that need it.
- Follow a planned health and vaccination program to control internal and external parasites and other diseases.
- Pen two or more animals together (especially sheep).
- Provide adequate turn-out time or other exercise for horses.
- Protect your animals from predators.
- Sort and load animals deliberately and safely with minimum force and stress on them.
- Provide rest time during long hauls.
- Don't bring an animal that is sick, goes down in truck or at show or is overweight or underweight.
- Give your animals plenty of space at the show.
- Have your animals identified at the show.
- Show people that we have "respect and compassion" for our animals.
- Learn and accept that most of our project beef cattle, lambs and pigs will be slaughtered or else don't show them.

Critical Answers for Dialogue Questions: Inhumane Practices

- Pulling animals behind a vehicle to train them to lead.
- Leaving animals tied for long periods of time, especially in sunlight.
- Beating, kicking or using a hot-shot to train animals.
- Keeping animals in sunlight so they become sunburned (especially critical on white pigs).
- Hauling animals in the heat of the day in summer.
- Handling animals roughly when they arrive at the show.
- Using hot-shots, whips, canes, sticks, etc. to beat animals when unloading, moving to pens or to the show ring, or anywhere in the ring; tattooing animals in a public place.
- Restraining animals to the point that they protest loudly (squall, bawl, blat, etc.).
- Kicking, kneeing, beating, jerking, slapping or slamming (sheep) an animal in the ring.
- Using oil on the coat of animal which makes it hot.
- Failure to feed and water animals regularly.
- Washing animals with cold water in late fall, winter or early spring.
- Failure to keep pens and stalls at the show clean and dry at all times.
- Leaving an animal unattended on a clipping or blocking stand (sheep), in a wash rack, in a chute or restrained in any other way.
- Over-use of the twitch on horses.
- Letting animals run loose at the fair.
- Chasing animals in an uncontrolled manner.
- Allowing animals to fight and injure each other.
- Taking our personal frustrations out on the animal during or after a bad show or a bad ride.
- Lack of grooming after the show, e.g. saddle marks on horses or oil on pigs.
- Transporting feeder pigs in a gunny sack in the trunk of a car.
- Improperly medicating animals, e.g., using unapproved drugs or approved drugs contrary to label directions.

This part of the activity illustrates some concepts of humane treatment of animals that were brought up in the group discussion. This activity also helps to illustrate concepts of animal behavior which are introduced in Unit 2.

Activity	Dialogue for Critical Thinking
DIRECTIONS Group the youths into pairs. Explain to the youths that they are going to role play being show animals and handlers. One member of the pair should be the animal while the other should assume the role of handler. Next, have all of the youths construct obstacles for the "animals" to go through. Example obstacles could be a loading chute constructed from chairs, a gate made from cardboard, or a pen simulated by a large box or closet. Once the obstacles have been constructed, explain to the youths that the animal and handler cannot communicate by talking. The handler must use the tools that are available (show sticks, canes, or bats) in order to guide the animal. The educator/leader should assume the role of the judge. Have the youth move the "animals" as if they were participating in a show. For example, have the pairs walk out of a pen and through a chute to get to the "show ring." Once in the ring have the handlers move the animals, place them in a particular order, and perhaps even switch animals. After five to ten minutes, stop the role play and lead the group in a discussion about what things they noticed and how they felt.	***Observing, Communicating*** △E: How did you get your animal to go where you wanted, was it easy or hard? Was it difficult to understand what your handler wanted? What things did you notice about how others treated their animals? How did you feel about the role you played? ***Comparing, Relating*** △R: Did you see any inhumane practices? Humane practices? Were the animals handled more roughly than they needed to be? ***Applying, Inferring*** △A: Do you think that the practices you used could be improved? How? Do you think you will change how you handle your project animal? What kinds of changes will you make?

Unit 1, Level 2

Educator/Leader Guide

Attitudes and Responsibilities Toward Animals and Food Production Which Promote Animal Well-Being and Product Quality

Importance of the Customer, Teamwork, and HACCP

Quality Assurance and Animal Care: Youth Education Program

J.R. Busboom, D.D. Nelson, J.A. Froseth, J.A. Newman, S.S. Whiteaker

Unit I: Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Lesson Title: *Importance of the Customer, Teamwork, and HACCP.*

This Lesson Is About: Different customers and customer desires, the importance of using all resources effectively, the difference between animal welfare and animal rights and how those philosophies influence how people look at animal handling.

What Youths Will Learn:

About the Subject:

- To develop a total quality management program that always keeps the end result in mind (focusing on your customers). We emphasize the importance of identifying who our customers are, what they expect, and how our product measures up to their expectations.
- The importance of using all of our resources (human, animal and environmental) effectively and efficiently to produce a product that meets or exceeds your customers' expectations. Teamwork is emphasized.
- To always try to improve. Using the Hazard Analysis Critical Control Point (HACCP) approach will identify the most important potential problems with animal products, how to prevent those problems (critical control point determination). This includes monitoring whether those things are being done and whether we are preventing the potential problems.
- About the concept of animal well-being including the differences between animal rights and animal welfare and their importance to the future of the livestock industry.

About Themselves:

- That they are responsible for the well-being of their animals
- That they can improve themselves throughout their lives.

Time Needed: 45 minutes

Life Skills:
Decision-making skills
Communication skills
Team-building skills.

Materials Needed: Critical Point #1: "Starting with Quality"

What Do I Need To Know?

Our plans often focus on urgent needs instead of on long-term goals. TQM requires us to look beyond our daily needs and activities and to plan with the end in mind. It involves developing a long-term perspective that emphasizes the needs and wants of customers. You must identify who your customers are and what they expect. In a livestock project one end product is the food people will eat. But livestock producers rarely sell their products directly to the people who eat them. Several types of customers exist other than the people who finally eat the food. For a show animal these include the judge, processor, and retailer. At each level the customer looks for certain ideal product characteristics. An effective producer knows the characteristics customers want at each level. Commodity groups and industry councils often conduct studies to identify what consumers need and want. After you know the characteristics of an ideal product, you can measure your product against that ideal and decide how to correct any deficiencies.

The 1991 National Beef Quality Audit (NBQA) is an example of an industry-wide study comparing an existing product to the ideal product desired by consumers. The quality defects, (or costs of nonconformance) that are produced on an industry-wide basis are shown here:

Quality Defect	**Loss per Steer/ Heifer**
Waste	
Excess external fat	$111.99
Excess seam fat	62.94
Beef trim corrected to 20% fat	14.85
Muscling (i.e., too much or too little)	29.47
Subtotal	**$219.25**
Taste	
Palatability	$2.89
Marbling	21.68
Maturity	3.80
Sex	0.44
Subtotal	**$28.81**

Educator/Leader Notes

You should review the animal rights/welfare material introduced in level 1 of this unit and have the group participate in the activity "Animal Rights and Personal Beliefs" (page 23) to demonstrate different philosophical views dealing with animal rights.

What Do I Need To Know?

Educator/Leader Notes

Quality Defect	**Loss per Steer/Heifer**
Management	
Hide defects	$16.88
Carcass pathology	1.35
Liver pathology	0.56
Tongue infection	0.35
Injection site lesions	1.74
Bruises	1.00
Dark cutters	5.00
Grubs, blood splash, callused ribeyes and yellow fat	0.38
Subtotal	$27.26
Weight	
Carcass weight (625-825 lbs.)	$ 4.50
Total	**$279.82**

Thus, the NBQA determined that carcass nonconformities cost the beef industry approximately $280 for every fed steer and heifer slaughtered in the United States during 1991. This study demonstrates the lack of uniformity and consistency that currently exists in our beef supply. This implies that these defects add to the cost of production, and ultimately the retail price of beef. Consumers' expectations, or perception of value, are not being adequately met. Quality audits by the pork and lamb industries found many of the same inconsistencies.

Have the group participate in the activity "Team Building" to demonstrate how they can use the results of the quality audits as well as how they can best use their resources.

Who are your consumers? In the case of a youth show exhibitor, from a product standpoint, consumers include the judge, the sale buyer, the packer, the retailer and the ultimate consumer. However, the exhibitor also provides entertainment and an image of the livestock industry, 4-H, and FFA. The consumers are the judge, parents, friends, competitors, and the general public. Exhibitors sell themselves as potential employees, students, politicians, community leaders, etc. In this program, we focus most of our attention on how various customers view animal products and handling of the animal. But all of our actions are observed by current and potential customers. Every operation has human, animal and environmental resources for improving product quality. A successful producer manages available resources in a way

What Do I Need To Know? | **Educator/Leader Notes**

that produces the highest quality product as effectively and efficiently as possible, resulting in customer satisfaction and profit for the producer. Analyze the four categories of nonconformance listed by the NBQA. Many of them can be addressed through improved management practices, while others require a change in the genetic make-up of the animals themselves. You cannot manage what you cannot measure. Therefore, keep good records of what you do and also of the evaluation of the end product so that you know what needs to be improved or changed the next time.

TQM also involves teamwork. Livestock shows are competitive, but we can still have teamwork. Youths can use help from their parents, teachers, friends, veterinarians and other youths. Everyone can have a better project if we work together and share ideas and talents.

HACCP. Hazard Analysis Critical Control Points is an effective and scientific approach to assuring the safety and wholesomeness of food products. HACCP programs are being implemented throughout the food processing and restaurant industry, and HACCP is also a critical component of food animal quality assurance programs. The following is a list of the seven components of a HACCP program and how they might apply to the livestock industry.

1. **Assess hazards and risks associated with production and marketing of the product.**
   e.g., a sulfa residue violation in your pigs.
2. **Determine Critical Control Points required to control the identified hazards.**
   a. Follow required withdrawal time for medicated feed.
   b. Clean out feeders that contained medicated feed before putting in nonmedicated feed.
   c. Remove manure from the pen when you switch to nonmedicated feed and clean up manure for one more week to prevent recycling sulfa in the feces.
3. **Establish the critical limits that must be met at each identified Critical Control Point.**
   a. Sulfa-containing feed must be withdrawn for at least the required withdrawal time prior to slaughter.

Have the group participate in the activity "Developing a HACCP plan" to illustrate the concept of HACCP.

What Do I Need To Know?	Educator/Leader Notes

b. Feeder must be cleaned and washed out prior to putting in medicated feed. Throw away leftover feed or feed it to pigs that will not be going to slaughter in the near future. Wash out the feeder in a location where the pigs will not have access to the runoff.

c. Pigs that have been withdrawn from sulfa-containing feeds must not have access to manure that might contain sulfa. Pigs that have been withdrawn must be placed in a clean pen or their pen must be cleaned when they are withdrawn and manure must be cleaned up regularly for one week thereafter.

4. **Establish procedures to monitor Critical Control Points.**

   When you purchase your show pig identify the day it will be slaughtered and then calculate the date sulfa-containing feed must be withdrawn. Mark it on your management calendar and develop a checklist that includes all of the steps required for proper feed withdrawal. This checklist should include required feed withdrawal date, actual date feed was withdrawn, whether feeder was cleaned out prior to adding nonmedicated feed, what was done with leftover feed, whether, after withdrawal, pigs had access to manure that might contain sulfa.

5. **Establish corrective action to be taken when there is a deviation identified by monitoring a Critical Control Point.**

   a. If feed is not withdrawn on time for planned slaughter date, postpone slaughter until withdrawal time has been met.

   b. If feeder was not cleaned properly when medicated feed was withdrawn, extend withdrawal time or do a urine test at the fair to see if the sulfa has cleared the animal, if not, extend the withdrawal time.

6. **Establish effective record keeping systems that document the HACCP plan.**

   Use and keep the checklist developed for Component #4.

7. **Establish procedures for verifying that the HACCP system is working correctly.**

   The urine test verifies that the system is working.

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 1: *Animal Rights and Personal Beliefs*

Materials Needed: Videotape – *The Heart of the Matter*

Activity	**Dialogue for Critical Thinking**
E Have the group view the video *The Heart of the Matter* (21 minutes, by Dr. Jeff Goodwin, available from Texas A&M University) After viewing the video, have the group participate in the discussion outlined in the Dialogue for Critical Thinking.	Discuss the following questions related to the video. ***Relating*** R**:** What would you do if you were one of the people in the overloaded boat with the dog, and the sharks were circling even closer? Why? ***Relating*** R**:** What would you do if you were the driver of a car on a narrow road with trees on both sides and a dog ran out in front of you? Why? A child ran out in front of you? Why? ***Inferring*** A**:** Do you believe in animal rights, animal welfare, or neither?

Critical Answers for Dialogue Questions

In this activity, there are no right or wrong answers. Youths' answers are based on the values that they have developed and their life experiences.

Attitudes and Responsibilities Toward Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 2: ***Hazard Hunt:*** *The Beginning of HACCP*

Materials Needed: Animal facility (e.g., member's home, livestock producer's facility)

Activity	Dialogue for Critical Thinking
When developing a HACCP plan, one analyzes all of the hazards that could affect the safety of the product being produced. This is done, in part, by creating a flow chart which details all of the steps that the animal goes through from birth to processing. Once this chart is produced, the points critical to the control of identified hazards are distinguished and methods to monitor these points are constructed. In this activity, we have members go through the preliminary steps in developing a HACCP plan by conducting a hazard hunt and trying to come up with critical points to control the hazard. This hunt can be done at a member's home or on a livestock producer's farm. Before conducting the hunt, have the group discuss possible hazards that could be found. Have someone in the group record the possible hazards that are discussed. After the hunt has been conducted, have the group report the hazards they found.	***Communicating*** △E: What things can you think of that could damage the quality or safety of the animal product you are producing? ***Observing*** △E: What things can you find that could be considered a hazard to food safety or quality? ***Comparing, Inferring, Applying*** △R △A: What things could you do to monitor the hazards you identified? How could you control the hazards you found? What action could be taken to correct the hazards you identified?

Critical Answers for Dialogue Questions

SOME POSSIBLE HAZARDS THAT COULD BE FOUND ARE:

1. A sulfa residue violation in your pigs.
2. A solid object imbedded in the tissues of your animal, such as a broken hypodermic needle.
3. An illegal residue of an injectable antibiotic.

CRITICAL POINTS FOR CONTROL

Sulfa Residue in a Pig

a. Follow required withdrawal time from medicated feed.
b. Clean out feeders that contained medicated feed before putting in nonmedicated feed.
c. Remove manure from the pen when you switch to nonmedicated feed and clean up manure for one more week to prevent recycling sulfa in the feces.

Solid Imbedded Object (Hypodermic Needle)

a. Properly restrain animal.
b. Use a clean sharp needle of the appropriate gauge and length. (See Unit 5 for recommendations).
c. Carefully give the injection and make sure the needle does not break off in the animal.

Illegal Residue

a. Use a product with no withdrawal time or a withdrawal time that extends to a date prior to your expected slaughter date for your animal.
b. Use proper injection technique and correct product amount based on the product label or the prescription of your veterinarian. This amount may vary depending on the species and weight of your animal.

PROCEDURES TO MONITOR CRITICAL POINTS

Sulfa Residue in a Pig

When you purchase your show pig identify the day it will be slaughtered and then calculate the date sulfa-containing feed must be withdrawn. Mark it on your management calendar and develop a checklist that includes all of the steps required for proper feed withdrawal. This checklist should include required feed withdrawal date, actual date feed was withdrawn, whether feeder was cleaned out prior to adding nonmedicated feed, what was done with leftover food, whether, after withdrawal, pigs had access to manure that might contain sulfa.

Solid Imbedded Object (Hypodermic Needle)

a. Check to see if the animal's movement is restricted to the point that you can safely give the injection. Place the animal in a properly adjusted chute.
b. Always use the correct needle size and always use a clean, sharp needle.
c. Check the needle after giving the injection to ensure that the needle did not break off in the animal.

Illegal Residue

a. When you purchase your show pig identify the day it will be slaughtered. Use products that are labeled to treat the illness your animal has or products prescribed by your veterinarian. The prescribed use of these products should indicate a withdrawal expiring prior to the slaughter date.
b. Follow label directions or veterinary prescription precisely (you may need to know the weight of your animal to do this) and record all information on an animal treatment record sheet like the one attached. Record the required withdrawal time, date withdrawal is completed, and the expected slaughter date.

Critical Answers for Dialogue Questions (Continued)

CORRECTIVE ACTIONS

Sulfa Residue in a Pig

a. If feed is not withdrawn on time for planned slaughter date, postpone slaughter until withdrawal time has been met.

b. If feeder was not cleaned properly when medicated feed was withdrawn, extend withdrawal time or do a urine test at the fair to see if the sulfa has cleared the animal, if not, extend the withdrawal time.

Solid Imbedded Object (Hypodermic Needle)

a. If your animal is not properly restrained or is in pain because of the restraint, adjust the restraining device (for example a squeeze chute) or find a more effective restraint method.

b. Change needles.

c. Immediately remove the needle remnant from your animal.

Illegal Residue

a. If required treatment has a withdrawal time that extends beyond the expected slaughter date, postpone slaughter until withdrawal time has been met.

b. If label recommendations were not followed, consult a veterinarian and extend the withdrawal time according to their recommendations.

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Activity Sheet 3: *Team Building*

Materials Needed: Beef Quality Audit, Youth Activity Sheets "Quality Audit" and "Team Building"

Activity	Dialogue for Critical Thinking
Give the youths a copy of the Beef Quality Audit. After giving them time to study the Audit, lead the group in a discussion about which losses can be affected by management changes, genetics, or producers, and who can control each problem. Using the activity sheet titled "Quality Audit," the youths should record the group's observations.	***Observing, Communicating*** E: Study the Beef Quality Audit Sheet. What things could be affected by management changes? Genetics? Producers? ***Relating*** R: Who can control each of the losses identified in the quality audit? ***Applying*** A: What things could you do to decrease the amount of loss that occurs in your project animal?
After the youths have discussed the quality audit, have them identify the resources available to them when raising their projects. Once they have identified their resources, have them record on the youth activity sheet "Team Building" who they are and how they can help.	***Organizing, Observing, Communicating*** E: Who do you know who has some experience in raising or caring for animals? What kind of expertise do they have? ***Relating*** R: How could they help you raise your project animal?

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Youth Activity Sheet: Quality Audit

Directions: Examine your copy of the Beef Quality Audit. In the space provided below, list which losses can be affected by management changes, genetics, or producers, and the person(s) who can control the problem.

	Beef	**Person(s) to Control**
Waste		
Excess external fat	________	________________
Excess seam fat	________	________________
Beef trim corrected to 20% fat	________	________________
Muscling	________	________________
Taste		
Palatability	________	________________
Marbling	________	________________
Maturity	________	________________
Gender	________	________________
Management		
Hide defects	________	________________
Carcass pathology	________	________________
Liver pathology	________	________________
Tongue infection	________	________________
Injection site lesions	________	________________
Bruises	________	________________
Dark cutters	________	________________
Grubs, blood splash, callused ribeyes and yellow fat	________	________________
	________	________________
Weight	________	________________

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

Youth Activity Sheet: Team Building

Who are your resources? Think of all the people you know who have some kind of expertise in raising animals. These could be teachers, parents, relatives, local producers, veterinarians, etc. List who they are and how they might help you in the space provided below.

Name	How Can They Help?

Attitudes and Responsibilities towards Animals and Food Production to Promote Animal Well-Being and Product Quality

BEEF QUALITY AUDIT

Quality Defect	Loss per Steer/Heifer
Waste	
Excess external fat	$111.99
Excess seam fat	62.94
Beef trim corrected to 20% fat	4.85
Muscling (i.e., too much or too little)	29.47
Subtotal	$219.25
Taste	
Palatability	$2.89
Marbling	21.68
Maturity	3.80
Gender	0.44
Subtotal	$28.81
Management	
Hide defects	$16.88
Carcass pathology	1.35
Liver pathology	0.56
Tongue infection	0.35
Injection site lesions	1.74
Bruises	1.00
Dark cutters	5.00
Grubs, blood splash, callused ribeyes and yellow fat	0.38
Subtotal	$27.26
Weight	
Carcass weight (625-825 lbs.)	$4.50
TOTAL	**$279.82**

Unit 2, Level 1

Educator/Leader Guide

Animal Handling and Exhibition Promoting
Animal Well-Being and Product Quality

Stress and Animal Well-Being

Quality Assurance and Animal Care: Youth Education Program

J.P. Black, D.R. Smith, S.A. Nickles, J.G. Cvancara, S.S. Whiteaker

Unit II: Animal Handling and Exhibition Promoting Animal Well-Being and Product Quality

Lesson Title: *Stress and Animal Well-Being*

This Lesson Is About: How stress affects the well-being of animals

What Youths Will Learn:

About the Subject:
- Controlling stress in livestock is necessary in order to produce the highest quality product.
- The body reacts to stress to protect itself from harm.
- Some production practices cause short-term stress but result in long-term animal well-being.

About Themselves:
- They react to stress in different ways.
- They are responsible for controlling their animal's stress and providing for their animal's well-being.

Time Needed: 45 minutes

Life Skills: Decision-making skills
Communication skills

Materials Needed: Critical Control Point #6 – "Animal Facilities and Handling"

What Do I Need to Know?	Educator/Leader Notes
WHAT IS STRESS? We have all heard about stress. People may say they have had a stressful day at home or at work. We sometimes hear that stress makes people behave differently: "Oh, don't mind Johnny. He's been under a lot of stress lately." We also hear about people who become ill when they are experiencing stress. Animals can experience stress and they may also change behavior or become sick as a result. An animal is stressed when something in its environment or management causes a change in the animal's function, structure, or behavior. The changes an animal makes when it is stressed are necessary in order for the animal to cope with the adverse effects of its environment or management.	View Critical Control Point #6: "Animal Facilities and Animal Handling"

What Do I Need to Know?	Educator/Leader Notes

Excessive heat or cold, physical exertion, pain, change in diet, social pressure, poor husbandry and disease agents are all examples of things that cause stress in animals. It is impossible to avoid all the things that cause stress.

Identifying stress and minimizing stressful situations in livestock production allows for greater productivity and well-being of the animal as well as economic benefits for the producer and consumer.

Stress from environmental and management aspects of animal production can be classified into four broad categories: thermal, physical, disease, and behavioral.

THERMAL STRESS

Factors that lead to thermal stress include temperature (heat or cold), humidity, wind, and solar radiation. Cold stress affects younger or sicker animals more than mature, healthy animals, while heat stress affects heavier or lactating animals more than lighter, younger animals. In addition, certain kinds of animals (i.e., sheep vs. pigs) and certain breeds of animals within a specific animal type (i.e., Hereford vs. Brahman) are more capable of adjusting to cold or hot climates.

PHYSICAL STRESS

Physical stress is caused by the physical component of an animal's environment. The physical component of an animal's environment includes the space available for the animal and the surfaces with which the animal comes into contact.

Write down important points for the group to see.

DISEASE STRESS

Disease stress is the stress that results from the onset and spread of disease.

BEHAVIORAL STRESS

Behavioral stress includes those factors that affect normal behavior (e.g., grooming, ruminating, grazing, herd behavior) of the animal. Adequate areas should be provided for activities such as feeding, sleeping or lying, and grooming.

IS ALL STRESS BAD?

There are practices used for all food animal species (e.g., vaccination, castration, dehorning, tail docking) that cause short-term stress and may also be painful.

What Do I Need to Know? | **Educator/Leader Notes**

Other management practices, such as separating the young from their dams during the process of weaning, may also cause short-term stress. Methods of restraint used to hold animals for processing, create short-term stress but provide a safer environment for livestock and people. Although these management practices cause stress over a short period, they are beneficial. They give long-term health and management benefits to individual animals and their herd mates by preventing long-term stress from injury, disease, or nutritional factors.

HOW CAN WE EVALUATE STRESS?

Observation is the only practical, reliable method to evaluate stress. Stress is difficult to quantify, but there are observable indicators of stress. Stress, pain, or suffering may be recognized by the following:

- Lack of appetite
- Increased susceptibility to disease
- Abnormal posture
- Retardation of normal growth
- Elevated respiration rate
- Restlessness
- Lameness or alteration of gait
- Dull or depressed attitude
- Grunting, squealing or other unusual vocalizations
- Lack of grooming (in animals where grooming is normal behavior)
- Self-isolation from pen mates

HOW DOES STRESS AFFECT ANIMALS?

Under stressful circumstances, biochemical reactions in the animal's body stimulate the body to perform at higher than usual energy levels which results in increased heart and breathing rates plus high blood pressure. When animals are under excessive or long-term stress, these stress reactions use up reserve supplies and may cause the animal to suffer digestive upset and become ill. It also causes the animal to become more susceptible to disease. For these reasons, we must seek to control the level of stress in our animals by reducing or removing causes of stress (we call them stressors) whenever possible.

What Do I Need to Know?	Educator/Leader Notes
WHAT CAN WE DO TO CONTROL UNNECESSARY STRESS? To control an animal's stress, we must control the stressors by providing for the animal's basic needs, comfort, and mental well-being. This includes providing shelter from weather, avoiding overcrowding with other animals, and keeping surroundings clean and dry. Take care of its well-being by using compassionate training methods that minimize discomfort. Exhibitors must not cause stress by using improper fitting techniques before and during shows. Finally, minimize stressors as much as possible when loading, traveling to, and unloading animals at the show. We may not be able to control all of the stressors that an animal is exposed to but, we can minimize their effects. In a total quality management plan, we have an obligation to recognize the signs of stress in animals, take steps to minimize or remove the stressor whenever possible, and to reduce the negative effects on the animal's health and well-being.	Have group participate in the activity "Stress and Animal Well Being."

Materials adapted with permission from: Animal Care Series, University of California Cooperative Extension, Davis, California. Editors: Gary Beall, Ed DePeters, James Farley, Wayne Jensen, Jim Oltjen, William J. van Riet, and Carolyn Stull.

QUALITY ASSURANCE AND ANIMAL CARE
YOUTH EDUCATION PROGRAM

Animal Handling and Exhibition Promoting Animal Well-Being and Product Quality

Activity Sheet 1: *Stress and Animal Well-Being*

Materials Needed: Youth Activity Sheet "Stress Identification"

Activity	Dialogue for Critical Thinking
E For this activity the youths should be at a member's house or some other place where animals are housed. Review the four categories of stress and have the kids detect potential stressors by filling out the stress identification worksheet. After the youths have identified stressors that the animals they viewed were exposed to, summarize these stressors. Discuss how to reduce the stress animals are exposed to.	**Observing** E: What things do you see that could cause these animals stress? ***Relating*** R: Of the stressors you saw, which are physical, thermal, disease, and behavioral stressors? ***Applying*** A: Ask the youths to come up with ways to reduce the amount of stress the animals they viewed could be exposed to.

Stress Identification

Directions: In this activity look at the animals' environment. Identify factors that could cause stress. This stress could be physical, thermal, behavioral, or disease. In the spaces provided below, identify the factors that could cause stress in the animal(s) you observed.

THERMAL	PHYSICAL	DISEASE	BEHAVIORAL

Unit 2, Level 2

Educator/Leader Guide

Animal Handling and Exhibition Promoting
Animal Well-Being and Product Quality

Using Animal Behavior to Safely Handle Animals

Quality Assurance and Animal Care: Youth Education Program

J.P. Black, D.R. Smith, S.A. Nickles, S.S. Whiteaker

Unit II:	Animal Handling and Exhibition Promoting Animal Well-Being and Product Quality
Lesson Title:	*Animal Behavior and Animal Handling*
This Lesson Is About:	Using Animal Behavior to Safely Handle Animals

What Youths Will Learn:

About the Subject:

- The blind spots of animals
- The flight zones of animals
- The balance point of animals

About Themselves:

- That they are responsible for the well-being of their animals
- That both they and their animals have basic instincts that influence how they react to situations

Time Needed:	45 minutes
Life Skills:	Decision-making skills Communication skills

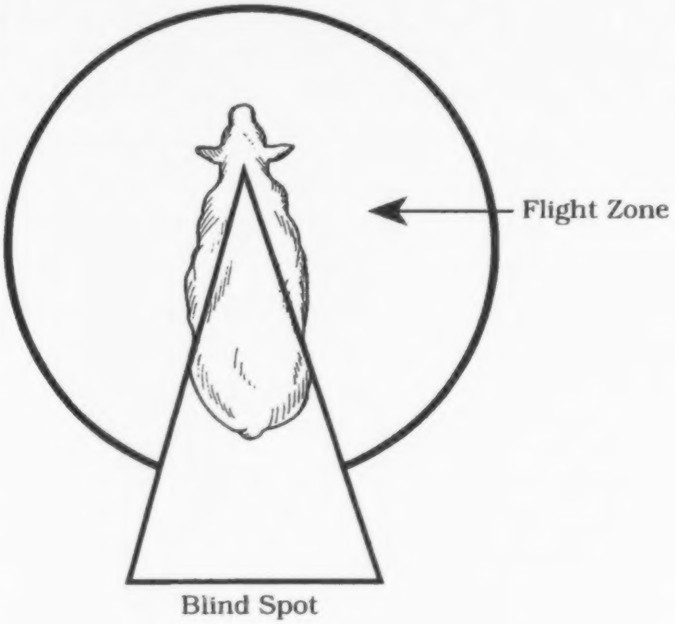
Materials Needed:

- Critical Control Point #6 "Animal Facilities and Animal Handling"
- 3" x 5" card and measuring tape or stick for each pair of members
- Live animal to demonstrate behavior in small enclosed area

What Do I Need to Know?	Educator/Leader Notes
Understanding animal behavior can help prevent injury, undue stress, and physical exertion for both animals and producers. Farm animals develop good or bad dispositions in part from the way they have been treated or handled. The ease of animal handling depends on temperament, size, previous experience, and design of handling facilities. Animals have instincts and habits that allow them to survive. These instincts and habits were developed to protect the animals. Some protective behaviors include kicking, charging, or running away.	View Critical Control Point #6 "Animal Facilities and Animal Handling." **OR** View the Livestock Conservation Institute videos on animal handling referenced on page 121 of this guide.

What Do I Need to Know?	Educator/Leader Notes

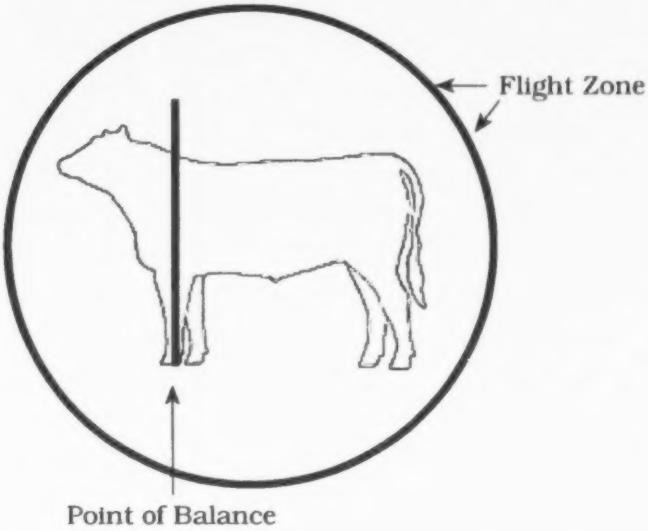
A key to safe handling of animals is being aware of, and respecting, an animal's comfort or flight zone. Animals develop a distinctive, comfortable space around them. As a person enters this zone, the animal becomes tense. The deeper the person enters the zone without allowing the animal time to adapt, the more severe the animal's reaction may become.



Write down important points for the group to see. (Use overheads to view pictures.)

Adapted with permission from: *Grandin, Temple editor, Livestock Handling and Transport, 1993. CAB International, Wallingford, UK,* 320 p.

Livestock animals have wide angle vision. That is, they can see everything except what is directly behind them. The spot directly behind the animal is called the "blind spot." When someone enters this area the animal cannot see the person and may be easily startled when it does see someone. This may cause the animal kick or run. To keep from startling your animal, approach it from the side or the front.

What Do I Need to Know?	**Educator/Leader Notes**
In addition to a flight zone and blind spot, animals have "points of balance."	
	Use overheads to view pictures.
Adapted with permission from: *Grandin, Temple editor,* *Livestock Handling and Transport, 1993. CAB International, Wallingford, UK,* 320 p.	
If the handler is within the flight zone and stands behind the point of balance, the animal will move forward.	
Moving in front of the point of balance will cause the animal to stop and possibly turn around. The more the handler penetrates the animal's flight zone without allowing the animal time to adapt, the quicker the animal will move. Backing farther out of the flight zone, allows the animal to calm and slow down or stop. If the handler is too close to the animal the animal may attempt to break away from the handler. This occurs regardless of whether the handler is in front of or behind the animal's point of balance.	
By keeping in mind the animal's flight zone, blind spot, and point of balance, you should be able to handle the animal in a calm manner. Calm animals are not stressed and are less likely to hurt themselves or their handlers. Handling animals calmly promotes relaxed animals that can produce high quality products.	

What Do I Need to Know?	Educator/Leader Notes

Although animals have excellent wide angle vision, they do not have good depth perception. They do not always see things the way people do. Shadows, dark spots, changing surfaces, and unfamiliar places frighten animals.

When introducing animals to new environments such as loading chutes, give them time to adapt. Since they don't have good depth perception, they need more time to decide if it is safe to walk into the new area. To partially compensate for their lack of depth perception, animals raise and lower their heads to focus on objects. Give your animal enough freedom to move its head so it can focus. Limiting the amount of options and allowing the animal to proceed at a slow rate is the best way to it to move where you want. Pushing animals too fast results in stressed and possibly injured animals and people. Undue stress also damages the animal's product quality.

Have group participate in activity "Using Animal Behavior to Safely Handle Animals".

The best way to prepare an animal for show is to practice as much as possible at home. An animal will not have the needed amount of time to learn at the show. Repetition is the key to making sure that the animal knows how to do what is asked of it. Remember the six Ps when preparing an animal for the show: **P**roper **P**rior **P**reparation **P**revents **P**oor **P**erformance. The six **P**'s prevent stressed animals that produce poor food products.

Proper training only includes techniques that offer no risk of injury or pain to the animal. The effects of unethical practices can be harmful or even fatal. Do not use oils or pour-on insecticides on your show animals. Oils cause the quality of the animal product to be damaged or completely unusable and pour-on insecticides result in drug residues. This damages the image of livestock shows, livestock producers, and erodes consumer confidence.

Proper preparation of your animal for the show should only include techniques that offer no risk of injury or pain. Animals should be healthy and the proper weight for the class in which they will be exhibited. Feet should be kept clean and should be trimmed before the show (preferably two weeks before the show, especially with hogs). Cleanliness of animals is very important.

What Do I Need to Know?	Educator/Leader Notes
Cattle and hogs should be free from scurf, dirt and lice and sheeps' fleece should be free from burrs, chaff, dung locks, dirt, parasites, etc. Lambs with short tail docks are prone to rectal prolapses. Thus when choosing a project lamb, make sure the tail dock is at least 1.5 inches. Fleece length requirements vary from show to show. Adhere to fleece length requirements for your show and always make sure that a fly repellent is used with closely shorn sheep. All market and feeder steers should be polled or dehorned and healed with regrowth not to exceed two inches from the hairline. Show animals with a dry hair coat. The judge's hand should not become oily when handling the animal. Use water instead of oil to enhance the appearance of a pig's hair coat. Use enough water so that all of the skin is wet but not dripping. Water is cooler for pigs in warm weather and oil makes pigs difficult to dehair during processing. Keep aggressive animals away from other animals to decrease injuries to animals and handlers. Never handle animals in a rough manner. Because grabbing the fleece causes bruising, hold sheep in position by gripping firmly under the chin. Cattle halters should be adjusted properly. Leads should be of an adequate length so as to enable control of the animal but not should not drag on the ground. Canes, bats, and show sticks should only be used to **direct** or **set up** animals.	

Animal Handling and Exhibition Promoting Animal Well-Being and Product Quality

Activity Sheet 2: *Using Animal Behavior to Safely Handle Animals*

The following activity demonstrates the basics of animal behavior. This activity is designed to teach youths how to take advantage of the animal's natural instincts. Using sound animal handling practices will lessen the chance of injury to both the youth and the animal.

Note: Animals that have been handled extensively may not have a flight zone. When demonstrating techniques on live animals, use animals that have not been handled extensively.

Activity	Dialogue for Critical Thinking
DIRECTIONS E This activity demonstrates the concept of peripheral vision and ties this to the blind spot that animals have. Group the youths into pairs of two. Each pair needs a 3" x 5" index card. Have one youth sit down. The other youth stands to one side of the youth's face. The person standing points a finger directly at the one sitting down. The sitting youth focuses on the finger. The standing youth with the finger still pointing at the sitting youth moves the card from the front of the youth's face to the side until the sitting youth says the card isn't visible. The sitting youth must focus on the other youth's finger and not move his or her head when the card moves.	***Observing*** E***:*** When did the 3" x 5" card disappear? Can you see what is behind you without moving your head? ***Relating*** R***:*** If someone or something was directly behind you and you didn't know it, would it startle you when you saw them? ***Inferring*** A***:*** Do you think your animal could be startled in the same way? How would you expect your animal to react when it is startled? ***Applying*** A***:*** Where are your animal's blind spots? How should you approach your animal to avoid being in its blind spot and startling it?
DIRECTIONS E This activity demonstrates the concept of a flight zone. Each pair of youths needs a measuring device (yard stick or measuring tape). Have each pair face each other with about four to five feet between them. The youths should move towards each other one foot at a time, pausing after each movement. Have the pair ask themselves if they are comfortable after each step. Have the youths complete this activity slowly at first with pauses, then have them repeat this activity rapidly without pausing.	***Observing*** E***:*** When did you feel that the other person was too close to you? ***Relating*** R ***:*** Did you want to get farther away when this happened?

Activity	Dialogue for Critical Thinking
DIRECTIONS E This activity demonstrates flight zones and points of balance using a member's animal. With the animal in a small enclosed area, have each of the youths separately move towards the animal at a moderate rate. Note when the animal moves away. Repeat the exercise with the youths moving more quickly and then more slowly towards the animal. E Have the youth try to stop or change the animal's direction by moving in front of the point of balance when the animal is moving. They may have to get closer to the animal to have the animal respond.	***Inferring* A:** If you were too close to your animal, do you think it would want to back away? ***Observing* E:** Did the animal move faster when you moved faster towards it? ***Observing* E:** About how far away from you was the animal when it moved? ***Observing* E:** What happened when you stepped in front of the animal's point of balance? ***Relating* R:** How far away from you was your flight zone? ***Comparing* R:** Was the animal more or less calm when you approached it slowly? ***Relating* R:** Were you more or less calm when your partner approached you slowly or quickly? ***Inferring* A:** What do you think your animal would do if you approached it too quickly?

Critical Points for Dialogue Question Answers

Animals also have blind spots, although they aren't as big as humans'. Entering or exiting from an animal's blind spot can frighten the animal. This causes the animal to react to protect itself. It does this by running away, kicking, or charging.

Approaching an animal slowly gives it time to adapt to your presence. Slow approaches decrease the size of the flight zone. Rapid approaches excite the animal and increase the area of the flight zone.

Using the animal's point of balance can help you get the animal to stop or go in the direction you want. Sometimes if you are too close to the animal, it will try to get away from you. It does this by quickly running past you even though you were in front of the point of balance. When the animal does, get in front of the point of balance again and use more dramatic body language. This could include waving your arms and getting closer to the animal before it tries to dash by you again.

Unit 3, Level 1

Educator/Leader Guide

Housing Livestock to Promote Animal Well-Being and Product Quality

Basic Housing Needs of Livestock

Quality Assurance and Animal Care: Youth Education Program

J. Smith, D.E. Hansen, J.A. Froseth, J.G. Cvancara, S.S. Whiteaker

Unit III: Housing Livestock

Lesson Title: *Basic Housing Needs of Livestock*

This Lesson Is About: How animals are healthier and more comfortable when their facilities are designed with animals' needs in mind.

What Youths Will Learn:

About the Project:

- Shelter and space requirements for livestock projects
- The importance of good ventilation
- What role bedding plays in keeping animals comfortable and healthy
- The importance of good sanitation
- Waste management

About Themselves:

- That their comfort is influenced by space and shelter.
- That all animals and people have basic shelter needs.
- That they are responsible for providing adequate housing for their animals.

Activity Time Needed: 45 minutes

Materials Needed:

- Handout "Space Requirements for Livestock"
- Activity Sheet for Educators/Leaders: "Space Requirements"
- "Space Requirements" Activity Sheet
- Activity Sheet for Educators/Leaders: "Bedding and Sanitation"
- "Bedding and Sanitation" Activity Sheet

What Do I Need to Know?	Educator/Leader Notes
INTRODUCTION Livestock facilities are anything built to house or confine livestock. These should be designed to meet the basic needs of the animal. Safety, health, and comfort of the animal are of great importance. It is inhumane treatment to keep animals in stressful conditions. When planning pastures, fencing, corrals and chutes, shelters, handling equipment, and	View Critical Point #2 "The Animal's Basic Needs."

What Do I Need to Know:Educator

feeding and watering equipment, basic needs should be kept in mind. Basic facility needs for livestock animals are the following:

1. Protection from summer heat and winter cold.
2. Adequate space for the animal's health and comfort.
3. Ease of moving animals.
4. Availability of a convenient feed and water supply.
5. Cleanliness and sanitation of livestock housing.

SHELTER AND SPACE REQUIREMENTS

Shelter from harsh environments is needed to ensure the animal's comfort and health during extremes in weather (windy, hot, cold, and wet conditions). Animals of different ages and in various stages of production require different levels of protection from the environment.

The space needed for each animal varies with the age and type of animal, and the type of pen or building used. The size and design of pens should provide areas for feeding, watering, resting, and elimination. Each pen should be large enough for the animal to stand, turn around easily, lie comfortably and have room to walk the circumference of the pen with freedom and ease. Review the handout "Space Requirements for Livestock."

Ideally, shelter should be provided in pastures, fields and outside pens. Trees and other natural objects can provide some shade and shelter from sun, snow, sleet, rain, and wind. Shelter to provide shade from the sun may be constructed so they also serve as protection from the prevailing winds and cold in the winter. However, these shelters should have some open sides to allow air movement during hot weather.

Check your animal project manual for more detailed information on space requirements and designs for shelters, pens, and equipment.

VENTILATION

Proper ventilation or air movement should provide fresh air exchange for animals in an enclosed barn. Poor air movement in closed buildings encourages health problems and the transmission of infectious

Educator/Leader Notes

Write important points on a blackboard or flip chart in front of the group.

Pass out the handout "Space Requirements for Livestock"

Have group compare the space requirements for pasture, drylot and confinement.

Have group participate in the activity entitled "Space Requirements" to teach youths about the principles of proper shelter and the concept of appropriate ventilation for animals.

What Do I Need to Know:

diseases because of moisture and toxic gas build-up and temperature fluctuations. Proper ventilation removes moisture, maintains air temperature at a degree of comfort for the animals, removes toxic gases, and stabilizes air over the animals.

BEDDING

Clean dry bedding is an excellent insulating material and provides for the animal's comfort and health. The choice of bedding is influenced by the age and type of animal, the type of facilities, and time of year. Less bedding is required if the easily cleaned manure and damp bedding is removed each day. Bedding loses its insulating properties when it becomes wet. When removing soiled bedding, about 8 to 10 pounds of either straw or sawdust for each 1,000 pounds of livestock needs to be replaced per day.

Clean, dry straw bedding keeps animals warmer. Wood chips, sawdust or straw is best used in the winter. However, sawdust also gives the added benefit of fly control during the summer months. Wood chips and sawdust should be kiln-dried or composted sawdust/shavings. Coarse, damp sand can be used for summer bedding for some animals to provide cooling.

SANITATION

Many microorganisms live in and multiply outside the host animal, infesting buildings, lots and pens. They expose animals to possible diseases and parasites. Reduce the number of organisms in the environment and the incidence of disease outbreaks through good sanitation practices. Prompt and proper removal of wastes, and cleaning and disinfecting housing and equipment reduces the spread of disease. Normally, the cleaner the environment, the healthier the animals will be. Accumulations of manure, urine, and spoiled feed result in an increase in the number of microorganisms such as bacteria, protozoa, and viruses that may cause digestive and respiratory problems. Two pathogens that can cause severe scours in livestock as a result of unsanitary conditions are *E. coli* and *salmonella*.

Educator/Leader Notes

Write important points on a blackboard or flip chart in front of the group.

Have group participate in the activity entitled "Bedding and Sanitation" to demonstrate the properties of different types of bedding and the principles of sanitation.

What Do I Need to Know:	Educator/Leader Notes
Keeping the facilities clean also helps reduce fly problems in the summertime and helps prevent stains on hair coats of show animals.	Write important points on a blackboard or flip chart in front of the group.
WASTE MANAGEMENT Dispose of waste in a manner that will maintain sanitary conditions, prevent fly breeding, minimize odors, and protect groundwater quality. If manure is stored, screen the pile from neighbors and the road. It should be easy to reach so it may be cleaned out in the spring and cleaned twice per week during the summer to reduce fly breeding. Manure handling is less of a problem when livestock are on pasture.	Have group participate in the activity entitled "Waste Management."
For small producers, composting may be a good alternative to other waste disposal methods, but it requires commitment of time and effort. Composting reduces the weight, moisture content and biological activity of the waste making it easier to handle and store while reducing or eliminating odor and fly problems.	

QUALITY ASSURANCE AND ANIMAL CARE

YOUTH EDUCATION PROGRAM

Space Requirements for Livestock

Type of Animal	Improved Irrigated Pasture*	Confinement^{c} or Dry Lot^{d}
Cattle (Dairy & Beef)	0.5 - 2 acres	125 - 200 sq ft^{d}
Sheep	0.1 - 0.2 acres	25 sq ft^{d}
Swine	0.1 - 0.2 acres per sow with litter 50-100 growing and finishing pigs per acre	1-1 1/2 sq ft per 25 lbs body wt, but never below 2 sq ft total^{c} 2 sq ft per 25 lbs body wt, but never below 4 sq ft total^{d}

* The basic rule of thumb is that one acre of good, improved, irrigated pasture should support an average of 1 to 2 animal units per month. There are times of the year that it will support more, during the lush spring growth period and again in mid-fall. In the summer and late fall, when temperatures are too hot or cold for grass growth, the pasture will support less than this.

c= Confinement
d= Dry Lot

Basic Housing Needs for Livestock

Activity Sheet: *Space Requirements*

The following activities demonstrate the concepts of the basic space requirements for housing livestock. This activity will teach youths about animal and human space requirements. Even though the facilities needed for livestock and people are different, many of the same factors influence these needs.

Materials Needed:

- Small room, walk-in closet or other confined space
- Household thermometer
- Mirror

Activities	Dialogue for Critical Thinking
E Designate a very small room with a door, such as a walk-in closet or bathroom to represent a small pen.	***Observing* E:** What is the starting room temperature? Does any moisture collect on the chilled glass surface?
Take the room temperature and get an indication of humidity by placing a chilled glass surface such as a mirror into the room before the youths enter.	***Observing* E:** How do you feel? Are you comfortable? Do you feel stressed and more irritable? Why or Why not? Describe your feelings.
E Place several youths into the confined space. The room should be crowded with the door closed. Have the youths try to perform normal day-to-day activities. For instance, have them lie down, eat, and walk around in the room. **Note:** The room should be crowded enough to allow only one individual to lie down at a time.	***Comparing* R:** Do you feel warmer after a few minutes? What is the room temperature? Does the air appear stale? Does the air feel moist? Does moisture collect on the chilled glass surface?
After several minutes take the room temperature and test the humidity. Gradually have the youths leave the room one at a time. After each dismissal, have the youths left in the confined room perform the same day-to-day activities.	***Comparing* R:** After each dismissal ask the youths how they feel?
Note: There should be an increase in the room temperature due to body heat and an increase in humidity, from the normal activity of moisture expired in breathing. The increased humidity should be indicated with steam on a cool glass surface such as a chilled mirror.	***Relating* R:** Can you relate what you've learned to how crowded conditions might affect livestock? ***Applying* A:** What health problems might be created by the heat and moisture conditions that result from crowded conditions?

Activities	Dialogue for Critical Thinking
	Note: Because moist, warm conditions are ideal for microbial growth there is an increase in health problems, particularly digestive and respiratory problems. ***Applying*** △: What are some of the other problems that might be created by crowded conditions? **Note:** Livestock species experience stress under very crowded conditions. This can result in poor growth performance, lower feed intake, lowered feed efficiency, poorer reproductive performance, more competition for resting space, food and water, increased fighting, cannibalism (tail biting, pecking, etc.) Sanitation also becomes a big management problem under crowded conditions.

Basic Housing Needs for Livestock

Activity Sheet: *Bedding and Sanitation*

The following activities demonstrate the principles of sanitation and the concepts of the bedding requirements for livestock. This activity teaches youths about the principles of sanitation and the insulating and absorption properties of different bedding material. Even though the need for clean sanitary bedding for livestock and people differ, many of the same principles and concepts influence these needs.

Materials Needed:

Bedding Activity

- Metal bowl for each type of bedding
- Straw, sawdust, woodchips and sand
- Water
- Colander

Sanitation Activity

- Loaf of bread
- Paper plates
- Plastic wrap
- Spray bottle with water

Activities	Dialogue for Critical Thinking
BEDDING ACTIVITY This activity illustrates the insulating and absorption properties of different types of bedding material.	
E Instruct youths to measure out equal amounts – about 2 quarts – of straw, sawdust, woodchips, and sand into chilled bowls.	***Communicating* E:** Which bedding do you use for your animals?
Have youths hold their hands in each type of bedding material for several minutes each.	***Comparing* R:** Do you notice a difference in how warm your hand feels in each of the different types of bedding material?
Add 1 quart of water to each bowl of bedding material. After 5 minutes, have the youths strain the bedding through a colander and collect the water. Measure the amount of water drained from the wet bedding material.	***Inferring* A:** Which bedding do you think will absorb the most water? Why? ***Comparing* R:** Which bedding absorbed the most water?
Have youths hold their hands in each of the damp bedding materials for several minutes each.	***Applying* A:** Which bedding would you use for your animal? Why?

Activities	Dialogue for Critical Thinking
SANITATION ACTIVITY This activity illustrates the principles of sanitation by following these steps.	***Communicating*** **E:** What do you think the bread will look like next week? Will it be the same?
E Place one piece of bread on a paper plate. Mist it with water and cover it with plastic wrap.	***Communicating*** **E:** Will the pieces look different?
Momentarily place a separate piece of bread in the following locations before putting them on separate paper plates: kitchen counter top, bathroom floor, and the floor of an animal's pen. Mist each of these pieces of bread with water before covering them with plastic wrap	***Comparing*** **R:** After one week: How are the slices of bread different? Which one has the most growth on it? ***Inferring*** **A:** What was the source of the growth on the slices of bread?
Label each bread sample. Keep the bread at room temperature or in a warm environment for one week.	***Applying*** **A:** Why do you think one has more growth?
Compare the growth on each slice of bread.	

****Note for the Educator/Leader:** In order to maintain safety while performing this activity, keep all of the bread samples on the same property from where they were taken. In addition, don't incubate bread samples in the kitchen or any other area where food is prepared or eaten.

Basic Housing Needs for Livestock

Activity Sheet: *Waste Management*

The following activities demonstrate the principles of waste management for livestock. They teach youths about the principles of composting. Composting is an effective way to deal with the large amounts of bedding and manure that can accrue when raising animals.

Materials Needed: Location to build compost pile, used bedding, manure, (refer to composting recipe for more details on raw materials) shovels, pitch forks, wheel barrel, composting bin (optional).

Activities	Dialogue for Critical Thinking
This activity involves showing youths how to build a compost pile. We suggest that the group build a compost pile at a member's home. Once they see how to build one, they can start their own at their house. The compost pile should be located in a convenient, but out-of-the-way location, near a water source, since the pile should be kept moist. Make sure the pile is located in an area that drains; the compost pile should never be soaked. A partially shaded, well-drained location, away from the roots of trees is the most desirable location. Also, remove grass or sod from where the compost pile will sit so that the pile comes into direct contact with the soil.	
SIZE OF THE PILE You may use a bin to partially hide the compost pile, however a bin is not necessary. A bin or a compost pile should be no less than three feet wide and three feet high.	***Organizing* E:** Ask the group to pick a good spot to compost and prepare the spot.
RECIPE A compost pile works because air, moisture, and organic matter (straw and manure) are used by bacteria and fungi. This action produces heat which results in compost humus. The compost pile you build should contain approximately 50 percent carbon (e.g., straw, woodchips, etc.) and 50 percent nitrogen (e.g., manure).	***Comparing* R:** Choose either recipe depending upon the availability of material and the desire of the youth's family.

Activities

Start the pile by placing 6-8 inches of carbon (e.g., bedding, grass clippings, leaves, sawdust, so on). These materials should be sponge damp. Next, add 6 to 8 inches of nitrogen. Add water if the manure is dry. Repeat the layering of 6 to 8 inches of carbon and nitrogen until the bin or pile is full. The compost pile should remain loose. If the pile is compacted it reduces air circulation and slows composting.

ALTERNATIVE RECIPE

Use this recipe if the you want to include household waste in the pile.

1st layer	Place chopped brush or other coarse material 3 to 4 inches thick on top of the soil surface. This allows air circulation around the base of the pile.
2nd layer	Add a 6 to 8 inch layer of mixed scrap, leaves, grass clippings, sawdust, bedding, and so on. These materials should be sponge damp.
3rd layer	An inch of soil serves as an inoculant; this is inactive microorganisms that become active when added to the compost pile.
4th layer	(Optional) Two to three inches of manure provide the nitrogen needed by the microorganisms. Sprinkle lime, wood ash, or rock phosphate over the manure layer to reduce the pile's acidity. Add water if the manure is dry.
5th layer	Repeat steps 1 to 4 until your compost holding unit is almost full.

Remember: Don't compact materials throughout steps 1 to 5 to keep good air circulation.

FOLLOW UP

Have the group prepare a schedule to follow up on the progress of the compost pile. Set a schedule where one group member monitors the compost pile each month.

Dialogue for Critical Thinking

Comparing △R:

After each month, did the pile look different? Can you tell that the pile was built with layers? Did the size of the pile change?

Inferring △A:

Is this a good way to handle waste from your animal project?

Unit 3, Level 2

Educator/Leader Guide

Housing Livestock to Promote Animal Well-Being and Product Quality

Temperature Zones of Comfort and Stress

Quality Assurance and Animal Care: Youth Education Program

J. Smith, D.E. Hansen, J.A. Froseth, J.G. Cvancara,
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Unit III: Housing Livestock

Lesson Title: *Temperature Zones of Comfort and Stress*

This Lesson Is About: How animals will be healthier and more comfortable when their facilities are designed with the animal's comfort zone in mind.

What Youths Will Learn:

About the Project:

- Comfort zones for most farm animals
- What factors influence comfort zones
- Management factors that can minimize environmental stress

About Themselves:

- How their comfort zone compares to various farm animals
- That all animals and people have basic shelter needs
- That they are responsible for the well-being of their animals

Time Needed: 45 minutes

Life Skills:
Decision-making skills
Communication skills
Team-building skills

Materials Needed: Critical Point #2 "The Animal's Basic Needs"

What Do I Need to Know?	Educator/Leader Notes
INTRODUCTION Livestock facilities are built to house or confine livestock. These should be designed to meet the basic needs of the animal. Safety, health, and comfort of the animal are of great importance. It is inhumane treatment to keep animals in stressful conditions. When planning pastures, fencing, corrals and chutes, shelters, handling equipment, and feeding and watering equipment, basic needs should be kept in mind. Basic facility needs for livestock animals are the following:	View Critical Point #2 "The Animal's Basic Needs."

What Do I Need to Know:	**Educator/Leader Notes**

1. Protection from summer heat and winter cold.
2. Adequate space for the animal's health and comfort.
3. Ease of moving animals.
4. Availability of a convenient feed and water supply.
5. Cleanliness and sanitation of livestock housing.

ENVIRONMENTAL STRESS

The major concern in designing livestock facilities is to minimize environmental stress. Unless animals are given protection from extremely high or low temperatures, they can become stressed and possibly die. People can put on added clothing to keep warm when it is cold, or wear lightweight, light-colored clothing when it is hot. Animals don't have this option and depend on us to help protect them from temperature extremes. To meet this design intent, we must first understand the comfort zone of the animal we are designing the facilities for and the typical environmental conditions in the region.

EFFECTIVE ENVIRONMENTAL TEMPERATURE

A farm animal's environment influences the actual temperature an animal experiences, often referred to as effective environmental temperature. This effective environmental temperature is the result of several factors:

1. Air temperature
2. Speed of air movement
3. Humidity, wet or muddy conditions
4. The insulating effects of the bedding, surrounding walls, ceilings and floors.

To better understand effective environmental temperature we must understand how animals lose body heat. There are four basic ways an animal loses body heat to its environment.

1. **Evaporative heat loss** is a type of heat loss familiar to all of us, it is the evaporation of moisture off the animal's skin or lung surface. Evaporative heat loss depends on the ability to sweat, sweat rate, skin temperature, and air temperature. In most farm animals this type of heat loss is limited mainly to evaporation from the respiratory system unless wet conditions exist.

Write important points on a blackboard or flip chart in front of the group.

2. **Conductive heat loss** is the transfer of heat from one object to another. This heat transfer depends on how much of the animal's body is in contact with the floor, the hair coat and fat cover of the animal, and how easily the floor material conducts heat.

What Do I Need to Know?	Educator/Leader Notes
3. **Radiant heat loss** is the radiation of heat from one surface to another surface not in contact. Imagine a person sitting in a living room in front of a big picture window on a cold day. The temperature of air between you and the window may be 72° F but the side toward the window will always be chilled because your body is radiating heat to the cold surface of the window. The same is true with an uninsulated wall or roof.	Write important points on a blackboard or flip chart in front of the group.
4. **Convective heat loss** is a little more difficult to explain. It is the heat that is always transferred along a temperature gradient between the surface temperature of the animal and the air temperature a short distance away. The rate at which heat is conducted across the boundary air layer depends on the thickness of the boundary air layer, the temperature difference between the animal surface and surrounding air, and air movement. In a situation where the air is still, a stable boundary layer is developed and very little heat is lost if the air temperature is not drastically different from the body temperature. However, if a draft is present a stable boundary layer is never established and body heat is always being lost.	
To illustrate effective environmental temperature, let's look at an example. If an animal is kept in an uninsulated, drafty barn on concrete floors without bedding, the temperature the animal actually feels will be at least 15° F colder than the temperature we would read on the thermometer. By adding straw bedding to the pen it will increase the effective environmental temperature by 8° to12° F by providing insulation, reducing conductive heat to the cold floor, radiant heat loss to the cold walls and roof, and some protection from drafts reducing convective heat loss.	Have the youths think of several ways the animal in this example would lose body heat.
COMFORT ZONE	
Comfort zone is the range of temperatures where an animal is comfortable. The comfort zone for most farm animals is between 50° to 65° F. However, comfort zones are influenced by the following: 1. Type or species of animal 2. Age of the animal 3. Body weight of the animal 4. Type and amount of feed 5. Level of activity 6. Stage of production (lactating, gestating, etc.) 7. Hair coat (summer or winter coat) 8. Body condition of the animal	Pass out handout "Comfort Zones."

What Do I Need to Know?	Educator/Leader Notes
When the temperature drops below the animal's comfort zone, it must do something to generate more body heat or reduce heat loss such as increase feed intake, increase activity level, crowd together, or shiver.	Write important points on a blackboard or flip chart in front of the group.
Very young animals are very easily chilled and have limited ability to regulate their own body temperature. Their comfort zone is much higher than mature animals. Young animals that become chilled tend to huddle together, eat less, gain slower and are much more susceptible to diseases such as diarrhea and pneumonia. It may be necessary to provide supplemental heat for newborn animals through heat lamps or heat pads specially designed for livestock.	
Most mature farm animals produce enough heat to keep warm through normal body functions like walking, digestion, breathing and other activity. Therefore, they are more concerned with staying cool rather than with keeping warm. Exceptions may be during periods of extreme cold or under wet or windy conditions. Animals on full feed, like most market project animals, have difficulty staying cool unless the environmental temperature is 40° F or more below their normal body temperature (or about 60° F).	Have members compare the comfort zones of young animals and mature animals on the handout "Comfort Zones".
HEAT STRESS	
When the temperature is above the animal's comfort zone it must reduce the amount of heat it generates, or cool itself. Many farm animals become slightly uncomfortable between 65° F and 80° F. Their blood vessels dilate near the skin and in their limbs so that the surface of their bodies becomes warm, feed consumption decreases, water consumption increases, breathing becomes more rapid. In animals that can readily sweat, such as horses, perspiration increases.	
Above 85° F, farm animals that can sweat keep their bodies cooled with evaporation of moisture from their body surface. Animals that cannot sweat or have a very limited ability to sweat, such as beef, dairy cattle, sheep, and swine, breathe rapidly or pant and are cooled by evaporation of moisture from the lung tissues. However, this is usually done at a sacrifice to the oxygen supply to the body tissues and creates a great deal of stress on the animal. In temperatures above 85° F, nonsweating	

What Do I Need to Know	Educator/Leader Notes
animals should be provided adequate shade with good air movement or fans, a cool, fresh water supply, or be misted with water. Growing and finishing pigs are often misted, allowed to lay on damp soil or wallow in mud during high temperatures to increase the evaporative cooling from the skin. When temperatures get above 90° F, most farm animals have much lower daily gains, poor feed conversion, and lower reproductive performance through higher embryonic deaths. Some animals, such as hogs, may even die if they are not provided with some way to cool themselves. All animals tend to become less active, and will lie down in the shade. Water consumption increases and if the water consumed is cooler than the body temperature of the animal, it will help cool the animal.	Have group participate in the activity entitled "Comfort Zones."

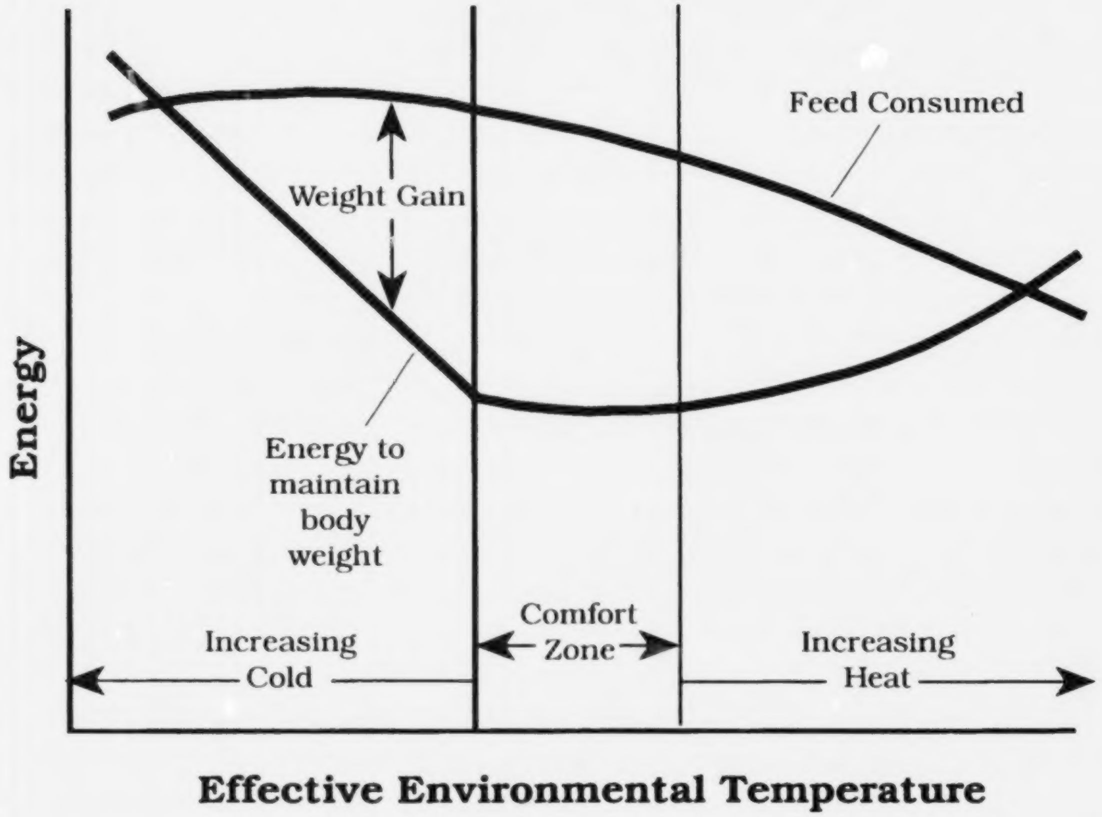
Comfort Zones

Temperature Zones for Optimal Performance

Type of Animal	**Comfort Zone**	**Type of Animal**	**Comfort Zone**
Cattle		Swine - Continued	
Dairy cow	35-65° F	Piglet, 3 - 8 weeks	75-85° F
Beef cow	40-60° F	Pigs, growing	65-80° F
		Pigs, finishing	60-75° F
Calf, newborn	60-75° F		
Calf, growing-finishing	40-60° F	Sheep	
		Ewe, full-fleece	40-60° F
Swine		Ewe, shorn	70-75° F
Pregnant sows & boars	60-75° F		
Lactating sows	55-70° F	Lamb, newborn to 2 weeks	80-85° F
Piglets, 3 days - 2 weeks	85-95° F	Lamb, growing-finishing	45-65° F

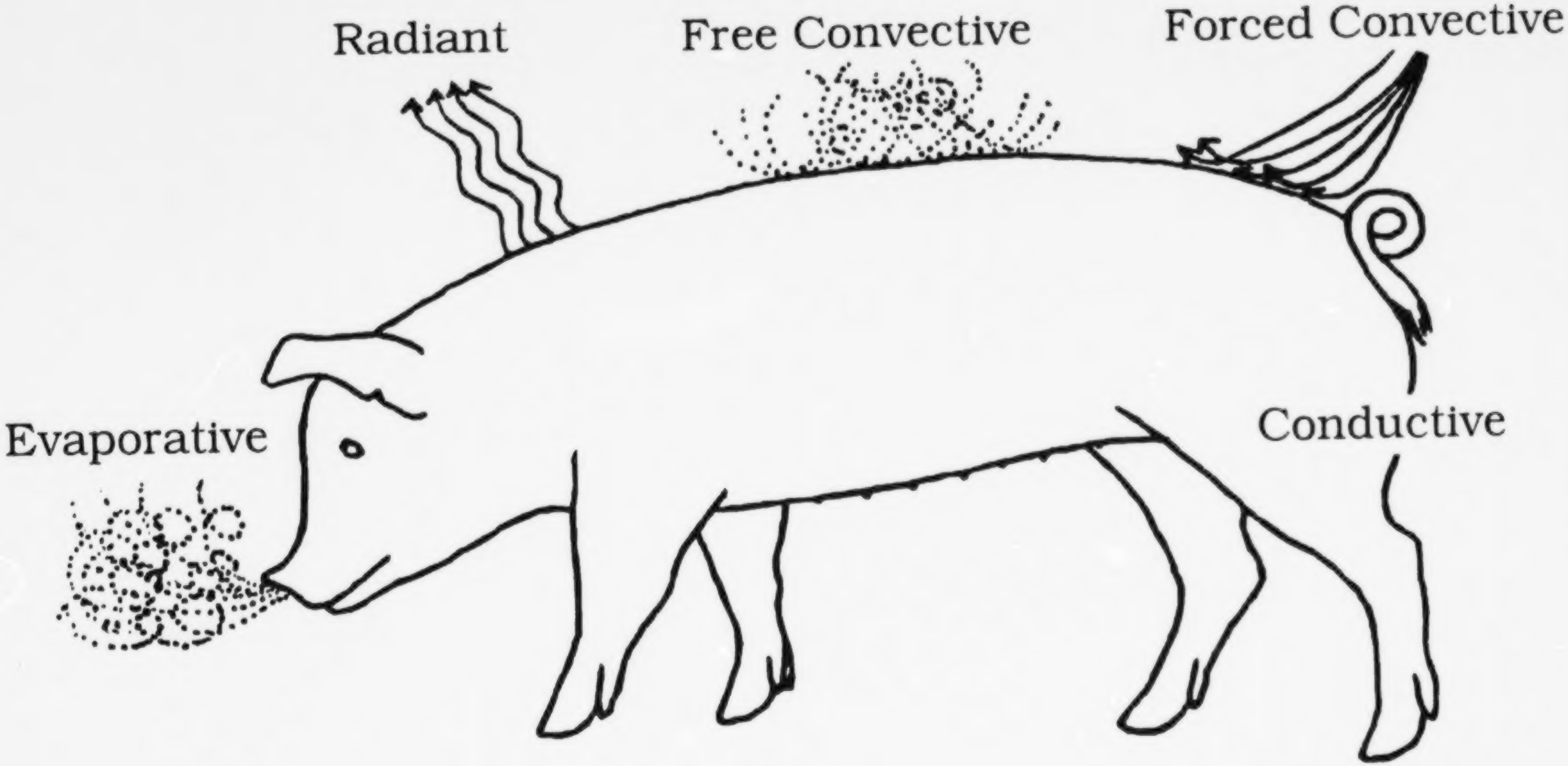
Adapted with permission from: *Scientific Farm Animal Production, an Introduction to Animal Science*, third edition. Robert E. Taylor and Ralph Bogart. Macmillan Publishing, New York. 1988.

Effect of Heat and Cold Stress on Gain



Adapted with permission from: *Scientific Farm Animal Production, an Introduction to Animal Science*, third edition. Robert E. Taylor and Ralph Bogart. Macmillan Publishing Company, New York. 1988.

Methods of Heat Loss



Temperature Zones of Comfort and Stress

Activity Sheet: *Comfort Zones*

The following activity demonstrates the concept of environmental stress and comfort zones. This activity teaches youths about animal and human comfort zones. Even though the comfort zones for livestock and people differ, the factors that influence effective environmental temperature are much the same. It is our responsibility to shelter livestock from environmental stress.

Materials Needed:
Household thermometer, variable speed fan, heat lamp bulb, lamp stand or lamp clip, spray bottle filled with water, piece of cardboard or poster board, large piece of dark-colored fabric, piece of light-colored fabric, aluminum pie tin, piece of Styrofoam, piece of 1/4" plywood, and 3 blocks of ice (bread or pie pan size).

Activities	Dialogue for Critical Thinking
E The group should sit in a confined area. Take the air temperature of the area using a household thermometer.	***Observing* E:** How do you feel? Are you comfortable? ***Comparing* R:** Is the temperature too hot? Is the temperature too cold? ***Inferring* A:** Would your project animal be comfortable at this temperature?
E Place a heat lamp approximately three feet from the youths and turn it on. Take the temperature of the area using a household thermometer. **Note:** Both the air temperature and the comfort level changes.	***Observing* E:** What is the temperature? How do you feel? ***Comparing* R:** Are you comfortable? Is the temperature too hot? Is the temperature too cold? ***Inferring* A:** Would your project animal be comfortable at this temperature?
E Drape a piece of dark-colored fabric over the youths, again note air temperature. Then drape a piece of light-colored fabric over them, note air temperature. **Note:** When draped with the dark fabric, the youths will feel warmer because the dark fabric absorbs more of the radiant heat from the heat lamp.	***Observing* E:** How do you feel with the dark piece of fabric draped over you? With a light piece? ***Comparing* R:** How does the color of fabric affect how comfortable you are? ***Observing* E:** Does it affect the air temperature?

Activities	Dialogue for Critical Thinking
Place a piece of cardboard or poster board between the heat lamp and the youths. **Note:** Both the air temperature and the comfort level changes.	***Applying*** A: Can you relate your experience to how an animal's coat color would affect its comfort in direct sun? ***Observing*** E: How do you feel? ***Comparing*** R: Does this affect how comfortable you feel? Does this make you more comfortable or less comfortable? ***Applying*** A: Can you relate your experience to how providing shade might help your animal in the summer?
Convective Heat Loss: Place a variable speed fan several feet from the youths and turn it on low speed. Increase the speed of air movement by turning the fan to high speed. Have the youths take the air temperature with the thermometer. **Note:** The air temperature should not change unless you are moving cooler air from another area, however, the comfort level of the youths will change.	What is the air temperature? How does speed of air movement affect how comfortable you feel? How might air movement affect your project animal in hot and cold weather?
Place a piece of cardboard or poster board between the fan and the youths.	How do you feel? How does this affect how comfortable you feel? Can you relate your experience to providing wind protection for your project animal?
Evaporative Heat Loss: Have the youths mist their hands with water and repeat the experiment with the speed of air movement. **Note:** The air temperature will be much the same, however, the youths will feel cooler.	How does being wet affect your comfort level? How important is it to control humidity or provide animals protection against rain or wet, muddy conditions?

Activities	Dialogue for Critical Thinking
Radiant Heat Loss: Have the youths sit several feet away from a large cold surface, such as a picture window in the winter time. Take the air temperature in the inner part of the room and between the youths and the window. **Note:** The air temperature is much the same, however, the side of the body facing the cold surface will feel cooler.	What is the air temperature in the inner part of the room? What is the air temperature between the youths and the cold surface? Does the side of your body facing the large cold surface feel different? Can you relate your experience to the importance of providing an insulated housing for young pigs?
Conductive Heat Loss: Place a block of ice on the following items: aluminum pie tin, a piece of Styrofoam, and a piece of plywood. Have the youths place their hands under each for several moments. **Note:** Different materials conduct heat differently. Aluminum is very conductive, wood is not very conductive and Styrofoam is essentially not conductive.	How fast does your hand begin to feel uncomfortably cool with each of the items? How important is it to select proper materials for floors and walls that animals will lay on or against?

Unit 4, Level 1

Educator/Leader Guide

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Nutrients, Feeding, Feed Storage, and the Importance of Quality Water

Quality Assurance and Animal Care: Youth Education Program

R. Blauwiekel, D.E. Hansen, J.A. Froseth, J.A. Newman, S.S. Whiteaker

Unit IV: Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Lesson Title: *Nutrients, Feeding, Feed Storage and the Importance of Quality Water*

This Lesson Is About: How to determine what nutrients are in feeds by reading feed labels; how animals will be healthier and the meat produced will be of a higher quality when feed is changed slowly, stored properly and not contaminated; and how animals will be healthier and more content when clean, good tasting water is provided to them.

What Youths Will Learn:

About the Subject:

- How to know what nutrients are contained in a feed
- How to determine the major ingredients in a feed
- How to determine if a feed contains medication and what the withdrawal time is
- Sources of feed contamination
- Importance of slow feed changes
- Importance of storing feed correctly
- Water is an important nutrient in an animal's diet
- That the water needs of an animal are affected by the environment
- That water quality changes with different sources

About Themselves:

- That they are responsible for the well being of their animals
- Both they and their animals have basic food needs
- That food for animals and people needs to be stored properly and protected from contamination

Time Needed: 45 minutes

Life Skills: Decision-making skills
Communication skills

Materials Needed:

- Critical Point #2 "The Animal's Basic Needs"
- Critical Point #3 "What's in the Feed?"

What Do I Need to Know?	Educator/Leader Notes

NUTRIENTS AND FEED LABELS

Feeds mixed by a feed company must have a **label** that lists the **ingredients** in the feed. The actual amount of ingredients is not usually given, but the most prevalent ingredient in the item is usually listed first. Ingredients are **feedstuffs** such as corn, barley, or soybean meal. Ingredients may be listed as general types, such as "grain products" or "animal protein products."

The label must also state the analysis of the feed. This part of the label explains what **nutrients** are in the feed. Nutrients are the building blocks contained in feeds for animals and foods for humans. Nutrients are chemical substances required by animals in order to live, grow, have young, and make milk. Every living thing (human beings, animals, and plants) needs nutrients.

Animals (and people) require these nutrients:

- WATER carries other substances around in the body and helps to regulate body temperature.
- CARBOHYDRATES furnish energy for moving, working, growing, and generating heat.
- FATS are used to store energy.
- PROTEINS are used to build parts of the animal's body, like muscle or skin.
- MINERALS make the animal's skeleton strong and regulate movement of water in the body.
- VITAMINS are only needed in very small amounts in the diet, but they are important because they "catalyze" or start necessary chemical reactions in the body.

The label on an animal feed tells the ingredients and nutrients in the feed. The actual amount of nutrients (and feed) required depends on the type of animal, its age, how fast it is growing, and its environment.

Finally, the label includes directions that explain how much of the product to feed and if there is a **withdrawal time** for the feed. Sometimes feed contains medicine to protect the animal from diseases or to make the animal grow more quickly. It is important that these medicines are not present in your animal's meat when the animal goes to market. People who eat meat (or who consume other animal products) do not want to eat chemicals other than the normal substances found in the product.

View Critical Point #3 "What's in the Feed?"

Ask the youths why food companies do not list exact formulations and briefly explain least cost and proprietary formulas.

Write important points on a board or flip chart in front of the group.

Ask the youths "What other animal characteristics might affect an animal's nutrient requirements?"

Discuss the difference between nutrients and ingredients.

Talk to the youths about chemicals. "We discussed the fact that nutrients are chemicals. Don't animals' bodies already contain chemicals?"

Talk about normal chemicals versus added chemicals that we use to prevent disease or improve production.

What Do I Need to Know?	Educator/Leader Notes
A withdrawal time is the time needed for the animal's body to get rid of any medicine or chemical contained in the feed. If your feed has a withdrawal time listed, you must stop using that feed for that amount of time before the animal goes to sale. Otherwise, "**residue**" (small amounts of the added medicine or chemical) may remain in the meat or milk.	
Simple feedstuffs, such as cereal grains, protein supplements, or roughages do not always have feed labels.	
Show classes for some 4-H and FFA animals have maximum weight limits. Choose an animal young enough so that it does not grow over the maximum weight limit when fed correctly. You should know about how many pounds per day you can expect your animal to gain. Choose an animal that will not grow over the maximum weight by the time it is shown. The amount of weight you can expect your animal to gain on average each day when fed properly is: Pigs: 1.6 pounds/day Cattle: 2.5 pounds/day Sheep: 0.5 pounds/day	Have group participate in the activity entitled "Interpreting Feed Labels."
Example: It is May 20th and your show is September 3rd. You want a market hog that will weigh 220 lbs. How much should the pig you select weigh on May 20?	
May 20 to September 3 = 106 days 106 days x 1.6 lbs/day = 169.6 lbs gain in 106 days 220 lbs (desired weight) - 169.6 lbs (gain / 106 days) = **50.4 lbs**	
Therefore the pig you select on May 20 should weigh about 50 pounds.	
FEED CHANGES, FEED STORAGE, AND FEED CONTAMINANTS	Talk about what can happen if a steer eats a wire, nail, or a piece of glass.
Choosing feeds of high quality and storing these feeds properly is important in order to produce a high quality product. Avoid feeds that are moldy or contain foreign material (pieces of wire, plastic, feces, or large amounts of weeds).	

What Do I Need to Know:	Educator/Leader Notes
Store feeds properly. Keep dry feeds in a clean, dry place, protected from birds, rodents, and pets. Birds and small animals (even your pet dog or cat!) can spread diseases and parasites. Feeds that are allowed to get wet or are stored in a damp place can become moldy. Some molds produce toxic substances ("mycotoxins") that contaminate the feed and make it taste bad to your animal. Not only can this make your animal sick, but it can also affect the quality of meat produced from your animal. Many feeds cannot be stored for long periods of time. The fats and oils in the feed begin to spoil. Vitamin supplements can lose their effectiveness. Hay or silage can be stored for an entire winter, as long as it is protected from weather and animal pests (e.g., mice, rats, birds).	Ask the youths if they know what hardware disease is. Explain that a sharp object penetrates the wall of the stomach, the animal can get very sick and experience a lot of pain. Write down important points on a board, overhead, or flip chart so the group can view them.
Never feed grains that have been treated for use as seed. The chemicals used for treating seed grain are very dangerous to animals and to people. Feed contaminants can be dangerous to animals as well as a source of chemical residues in meat. Contaminants can be **natural**, resulting from plant metabolism or from molds in the feed. **Accidental** contamination by chemicals such as antibiotics or pesticides may occur during processing or storage. Cross contamination of feeds with antibiotics can take place on the farm if medicated feed is not kept separate from nonmedicated feed. If it is suspected that there is a problem with feed, ask for help from a 4-H leader, Vo-Ag teacher, or person who is knowledgeable in animal nutrition.	Ask the students how they can recognize if a feed has been treated for seed. If possible bring a small amount of corn which has been treated and show its color. Group participation in the activity "Feed Contaminants" will familiarize the group with common ways that feeds are contaminated.
A feed may need to be analyzed if animals do not eat or grow as you would normally expect. Laboratory analysis can tell if feed contains contaminants. Feeds can be analyzed for nutrient content.	Have group participate in the activity "Feed Storage" to teach the principles of proper feed storage.
WATER AS A NUTRIENT Many people don't think of water as a nutrient. In fact, going without water will harm animals much sooner than going without food. **What does water do in your animal's body?** • Water is a delivery system. It carries other materials around in the body, and helps get rid of waste products.	View the Critical Point # 2 "The Animal's Basic Needs."

What Do I Need to Know?	**Educator/Leader Notes**
• Water dissolves other chemicals that are necessary for the body to work and allows chemical reactions to occur. • Water cushions and lubricates joints. Imagine how scratchy your eyes would feel if there were no tears in them, or how hard it would be to swallow without the saliva in your mouth. • Water is especially important in regulating body temperature. Animals cool themselves by the evaporation of water from their skin (sweating) or by using their mouths and noses (panting).	Ask the students what makes them thirsty. Do they drink more when it is hot or if they have been playing a sport? Do they feel thirsty after eating salty foods like potato chips or pizza?
Animals should always have clean, good-tasting water to drink. An animal's need for water is greater during hot weather, during pregnancy, and when they are making milk. Even young calves and lambs who are still drinking milk need to have clean, fresh water to drink. Animals' feed intake is closely related to their water intake. If young animals do not have access to water, they will not begin to eat solid food as quickly.	Write down important points on a board or flip charts that are in plain view of the group.
If it isn't possible to have water available all of the time, animals should be given water at least twice each day. On average, a 100-pound animal needs about one gallon of water per day.	Have the group participate in the activity "Water Quality" to illustrate the importance of quality water in the diet.
Place waterers so that they will not become dirty with feces or urine, but so animals can still reach them. Clean watering devices or buckets often and install heaters or break ice out of waterers in the winter. In some areas, water may contain dissolved substances, such as nitrates or sulfates. Water can also carry infectious disease organisms (bacteria). Although you can't see these substances, they can be unhealthy for you and your animals. Usually, water that has been declared safe by the State or County Public Health Department will be suitable for animals. The water at fairgrounds or shows may taste different and animals may not drink water that tastes strange if they are not used to that flavor. If this is a problem, begin to flavor your animal's water with molasses or lemon juice one or two weeks before the show or sale. Then you can add the same flavor to the water at the show to keep your animal drinking.	

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Activity Sheet 1: *Interpreting Feed Labels*

Materials Needed: Feed labels from project animal's food, pet's food, and the analysis information from a cereal box (have youths bring all three types), example of medicated feed tags

Activity	Dialogue for Critical Thinking
DIRECTIONS E Each person in the group should bring a feed label from their project animal's food, their pet's food, and the analysis information from a cereal box. A medicated feed tag should be brought or provided for each person. Have the youths compare the information on the tags.	***Observing* E:** Which ***ingredient*** is the major ingredient for each feed? What ***nutrients*** are analyzed in each feed? ***Comparing* R:** Are the same nutrients analyzed across all feeds? How do the labels differ? How are they the same? ***Applying* A:** Why is it important to read the labels provided with a feed? ***Inferring* A:** How can not following the directions on a feed tag affect the quality of the meat produced from your animal?

Critical Points for Dialogue Question Answers

Usually, the major ingredient for a feed is listed first. This is a requirement for human foods but not for animal feeds.

Usually, crude protein, fat, and fiber are measured in all feeds.

Labels differ according to the type of feed. For instance, mineral supplements list the major minerals and vitamins that are provided and not the amount of protein, fat, or fiber since most mineral supplements are not fed to provide these nutrients. On the other hand, feed grains provide the amount of protein, fat, and fiber but not necessarily the amount of all minerals and vitamins.

Read feed labels in order to assure that your animal is receiving a balanced diet. You need to know what is in your feed to know if your animal's diet is balanced.

If a feed is medicated, reading the label will provide you with the necessary ***withholding*** time before your animal can be sent to market. Not allowing the proper length of withholding could result in residues in the meat or milk produced from your animal.

Medicated feeds have specific directions for their use. They are only to be fed to the species indicated on the label. All label directions should be closely followed.

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Activity Sheet 2: *Feed Storage and Contaminants*

Materials Needed: 2 covered containers (e.g., quart jars or freezer containers), water, and from each youth: 2 samples of a feed (hay or grain), small amount of penicillin (2 to 3 drops in a syringe), a glass of milk (in disposable cup) for each youth and 3 to 4 extra glasses of milk, vinegar or lemon, Worcestershire or soy sauce, food coloring, moldy and nonmoldy human food samples (next meeting)

Activity	Dialogue for Critical Thinking
DIRECTIONS △E For this activity, have the group follow the directions on their activity sheets. Each member should have two samples of a feed (hay or grain) and two covered containers (e.g., quart jars or freezer containers). Have the members place one sample in each container. In one container, the member should add 1/2 cup of water. After the water is added the container should be covered and placed in a warm place. The second container should not be covered and should be placed in a cool dry place. Examine the containers at the next meeting. **DIRECTIONS** △E Use the samples of moldy feed and clean feed (hay or grain) that the group made at the previous meeting. For additional interest, samples of moldy and nonmoldy human food could be put on display. Have each member of the group look at all of the samples of moldy and clean feed. The group should look at, smell and touch each of the feed samples and record their observations on the activity sheet.	***Observing* △E:** Does one container of feed look different from the other? Which container has the most contamination? ***Relating* △R:** Which method of storage caused the feed to mold? How could you tell that the feed was contaminated with mold? Did it look different? Did it smell or feel different? ***Inferring* △A:** Based on your previous answers, do you think it would taste different? How does storing feed in a clean dry place affect the quality of the feed? Which feeds do you think your animal would prefer to eat? Would eating a contaminated feed make your animal sick? Have you ever been sick after eating bad food? How did you feel when you were sick? ***Applying* △A:** How does being sick affect the well-being and quality of meat or milk your animal produces?

Critical Points for Dialogue Question Answers

Storing feed in a clean dry place away from potential contaminants keeps the feed from becoming moldy or contaminated. You can tell that a feed is moldy by looking, smelling, and feeling the feed. Feed that is moldy tastes bad to animals. They always prefer to eat clean feed. However, if they are very hungry they will eat moldy feed.

Eating a moldy or contaminated feed can make your animal very sick. Occasionally, even small amounts of mold which are not obvious to you, can put animals off-feed or make them ill. Sickness stresses your animal and decreases the quality of the meat, milk, or wool produced from your animal.

Activity	**Dialogue for Critical Thinking**
DIRECTIONS E Furnish milk as a snack for the youths. Have everyone (all who are not lactose sensitive) take a taste. Reserve 3 to 4 glasses of milk, preferably in clear glasses. After the youths have tasted the milk, put the extra glasses of milk on your table or counter. Put a few drops of food coloring into one glass, a tablespoon of vinegar or lemon juice into another, and a teaspoon of soy or Worcestershire sauce into another. Have the youths look at and smell the "contaminated" samples of milk. Put a drop of penicillin in another glass of milk. Stir it with a spoon (add some drama). Have the youth look at and smell the milk (no tasting).	***Observing* E:** Have the youths at least taste their snack milk and look and smell the contaminated milk. ***Relating* R:** Ask the youths if they would buy milk at the store if it looked, tasted, or smelled the way the "contaminated" milk does. How would they feel if they bought a container of milk and found that it was sour, or didn't taste the way they expected it to? ***Comparing* R:** Can they detect the difference between this milk and the milk that they had for a snack? Is this milk "contaminated?" Would they want to buy milk that had penicillin added to it, even if they couldn't see or taste it? ***Applying* A:** If your animal was slaughtered before the withholding time was up could you tell by looking at the meat or milk that it was contaminated?

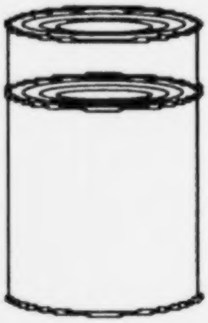
Critical Points for Dialogue Question Answers

Some feed contaminants (especially medicated) are not so easily seen. Often, you cannot tell the difference between products from the animals that ate contaminated feeds and animals that didn't eat contaminated feeds. Consumers of meat and milk products want to be assured that the products they buy are not contaminated. If they think that the products are contaminated it is likely that they will not buy that type of product again. They may also decide to not buy any meat or milk product again if they found it to be contaminated.

Feed Storage and Contaminants Youth Activity Sheet

DIRECTIONS

Obtain two containers from your leader or teacher. If you brought hay, chop it up into 2" pieces using scissors. In both containers place some of the feed that you brought from home. The container should be about half-full. Do not press the feed into the container, it should be fairly loose. Label the first container "control" and the second container "test". Label both the container and the lid. Add 1/2 cup of water to the test container. Place the lid on this container and put it in a warm place. Your leader or teacher will help you find such a place. Place the control container in a cool, dry spot. Do not put the lid on the container. Leave these containers in their storage areas until the next meeting (at least one week). At the next meeting/class locate your container and record your observations below.



TEST

CONTROL

Smell

Appearance

Touch

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Activity Sheet 3: *Water Quality*

Materials Needed: 3 to 4 containers of water (each should hold enough water for everyone in the group to get a sample out of each), salt, vinegar, lemon juice, chlorine, molasses, sugar, disposable cups (3 to 4 per youth), 4 five-gallon buckets, measuring device (2 to 4 quarts), water

Activity	Dialogue for Critical Thinking
DIRECTIONS E Prepare three or four containers of water. Add one of the following flavoring agents to each of the containers you prepare: salt (1/2 teaspoon per quart of water), sugar, molasses, chlorine (3-4 drops per quart of water), vinegar, or lemon juice. Provide disposable cups for the youths to taste a sample of water from each container. Have each member taste each water sample. Have them write down how each one tasted. Place lemon in some samples and sugar in other samples. Have the individuals taste these samples.	***Observing* E:** Did the water taste good or bad? Did it taste like minerals? Which one tasted the best? ***Comparing* R:** Does the water taste differently? Does it taste better or worse? Did the worst tasting sample taste better with lemon or sugar? ***Inferring* A:** Do you think your animal could get used to the taste of the lemon/sugar? If lemon/sugar were in the drinking water, do you think it would keep your animal drinking if the water tasted bad or different?
E Calculate the amount of water that an average-size steer, lamb, and hog would drink. Also determine the amount of water that the youths drink each day. (Use one gallon of water per 100 lbs body weight). In each of four different buckets, place the amount of water that they calculated.	***Observing* E:** Ask the youths for their observations about the amount of water that their animals drink. Is it a lot? Which animal drinks more? ***Comparing* R:** How does the amount of water that they drink differ from the amount of water that their animal drinks? ***Inferring* A:** How does not drinking water affect the well-being and quality of meat or milk that your animal produces?

Critical Points for Dialogue Question Answers

Usually, the water that one is used to drinking tastes the best. Water from different sources may contain more minerals, chlorine, or sulfur than the water you are used to drinking.

Adding lemon, sugar or molasses to the water masks the taste of the water. In addition, if you add these flavors to unfamiliar water it brings a familiar taste to the new water and may keep your animal drinking water that it would otherwise not drink.

Not drinking water dehydrates and stresses your animal. Not drinking enough water can make your animal sick. Sick and stressed animals do not feel well and do not produce quality meat or milk products.

Unit 4, Level 2

Educator/Leader Guide

Livestock Feeds and Feeding to Promote
Animal Well-Being and Product Quality

Feed Storage and Contaminants

Quality Assurance and Animal Care: Youth Education Program

R. Blauwiekel, D.E. Hansen, J.A. Froseth, J.A. Newman,
S.S. Whiteaker

Unit IV: Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Lesson Title: *Feed Storage and Feed Contaminants*

This Lesson Is About: How animals will be healthier and the meat produced will be of a higher quality when feed is changed slowly, stored properly, and not contaminated.

What Youths Will Learn:

About the Subject:

- What is feed contamination
- Sources of feed contamination
- Importance of storing feed correctly

About Themselves:

- That they are responsible for the well-being of their animals
- That food for animals and people needs to be stored properly and protected from contamination

Time Needed: 1 hour

Life Skills:
Decision-making skills
Communication skills

Materials Needed: Critical Point #3 "What's in the Feed?"

What Do I Need to Know?	Educator/Leader Notes
"Quality Control" is a very important issue in the business of producing animal feeds. After all, the quality of feeds that an animal consumes has a great impact on the quality of that animal product, whether it be meat, milk, or eggs. The U.S. Department of Agriculture oversees the labeling of feeds, and it is illegal for feed manufacturers to misrepresent their feeds either in their labeling or in their advertising.	View Critical Point #3 "What's in the Feed?"
The vast majority of feeds are properly formulated and mixed, and meet quality standards. However, some terrible errors in feed formulation have occurred over the years which resulted in great financial losses to feed manufacturers and livestock producers. An error in quality control at the feed mill can be horrible because it can affect many	

What Do I Need to Know:	**Educator/Leader Notes**
animals and people. But the most common errors in quality control occur **at the farm**. As a livestock producer, **you** are responsible for maintaining the quality of feed that you purchase until it is fed to your animal. **You** are responsible for feeding the proper feeds in the appropriate amounts to assure your animal's well-being and the quality of your animal's product.	
Contaminants in feeds can affect your animal's health and its ability to grow. Even if there are no obvious adverse effects on the animal, **contaminants** can cause undesirable **residues** in the animal product being marketed. Over- or underfeeding will not result in a contaminated product, but can result in poor weight gains or other disease problems.	Ask one of the students to look up **contaminate** in a dictionary. Have them read the definition out loud.
What do we mean by contaminant? Several kinds of contamination occur. One of these is **microbial contamination**, or the presence of undesirable bacteria in a product. In food for humans, a recent example of microbial contamination resulted in the large outbreak of *E. coli* O157:H7-related illness in the Pacific Northwest in 1993. Animal feeds or water can also be contaminated with dangerous bacteria such as: the *salmonella* species, *listeria*, or *leptospira* bacteria. Other living organisms can contaminate food or feed. Viruses, fungi, and parasites can all cause dangerous food- or waterborne illnesses. **Nonmicrobial contaminants** include food products other than those that the finished product is meant to contain, foods that cause allergic reactions in consumers, and chemical contaminants. **Chemical contaminants** include accidental residues from herbicides or pesticides, antibiotics or other medicinal drugs, or toxic metals (such as mercury or lead). **Contamination with naturally-occurring chemicals** can also occur when feed or food contains toxic chemicals resulting from mold growth "mycotoxins" or undesirable substances from plants; off-flavors in milk from cows consuming wild onion are an example. Table 1 lists several potential contaminants in livestock feed and water.	Ask the youths for ideas as to how microbial contamination of feeds might happen. Some possible answers: feces or urine from livestock, from rodents, birds or pets, other body secretions from animals who are sick, or bacteria from soil or water. For example: viruses — polio virus in people, infectious hepatitis, TGE virus in baby pigs; fungi— ergot growth on grains, which affects both animals and people; parasites— toxoplasma from cat feces which can cause fetal defects in humans, trichinella in pigs causing trichinosis in humans.

What Do I Need to Know?

Educator/Leader Notes

Table 1

Potential Contaminants in Livestock Feeds and Water

Mycotoxins	Feeds contaminated by mold, grain harvested late due to wet weather, by-product feeds such as screenings or dust
Ergot	Warm, moist weather late in the growing season, use of grain screenings
Salt	Consumption by swine of feeds with high salt content or water restriction with consumption of normal diet
Nitrates	Crops heavily fertilized with nitrogen, especially sorghum but also small grain crops and corn. Water.
Sulfates	Primarily water; interferes with copper metabolism. Also changes taste, causes GI disturbances, and polio in lambs and cattle
Antibiotics	Cross-contamination in feed processing, labeling errors or failure to read labels, using feed intended for another species or production type.
Ionophores	Ingestion of monensin or lasalocid-containing feed by species for which the feed was not intended, or in abnormal amounts (horses most sensitive)
Gossypol	Diets containing relatively large amounts of cottonseed or cottonseed by-products
Prussic or hydrocyanic acid	Green chopping of drought-stricken or frosted crops such as sorghum or corn, clippings from fruit trees
Insecticides or fungicides	Feeding of grain intended for use as seed

CONTROLLING FEEDBORNE CHEMICAL CONTAMINANTS

Chemical contamination of feed occurs on the farm because of cross-contamination between feed batches or errors in feeding (giving animals a chemical-containing feed that was not intended for them). How can you avoid these mistakes?

- Observe withdrawal times on medicated feed. Label medicated feeds adequately, or have separately labeled storage bins or cans for medicated and nonmedicated feeds. If someone else feeds your animals on a weekend or while you are on vacation, leave clear feeding instructions.
- Clean out feed bins and feeders when you are switching animals from a medicated to a nonmedicated feed. Give only medicated feed

What Do I Need to Know?

to animals who are not within the withdrawal time before slaughter.

- Avoid "bio-recycling" of antibiotics by cleaning up manure daily for several days after the animals have been taken off medicated feed (most important for hog projects).

  (Bio-recycling of contaminants occurs when animals consume fecal material that contains those contaminants)

PEST CONTROL

Rodents and birds consume large amounts of feed, and contaminate more with urine and feces. Rodents spread diseases such as Leptospirosis and Salmonellosis. Rats also do a great deal of damage to facilities, with their ability to gnaw through wood, cinder block, fiberglass, and metal siding.

Control rodents by eliminating their nesting places (clean up trash, keep feed and other materials off the floor, cut tall grass and brush near buildings). Empty open bags of feed into garbage cans with tight fitting lids, and sweep up feed spills immediately. Control bird access to feed by screening and by eliminating roosting areas.

QUALITY CONTROL

- Purchase quality feeds from a reliable dealer. A reliable dealer does not necessarily mean a large dealer. Does your feed store buy in quantities that can be turned over in a reasonable amount of time? Is the feed storage area dry? Are the bagged feeds stored on pallets? Is there evidence of mold, insect infestation, or fecal material in bulk feeds?
- Store feeds properly at home. Protect feeds from moisture and from bird and rodent pests. Store bagged feeds on pallets and keep the feed storage area neat.
- With the exception of forage-type feeds, do not purchase more feed than you can use in six to eight weeks. Many feeds cannot be stored for long periods of time. The fats and oils in the feed may spoil, and vitamin supplements lose their activity.
- Identify medicated feeds. Avoid cross-contamination of medicated and nonmedicated batches of feed. Do not give animals feed that is intended for another species or type of animal without checking the feed ingredients carefully.

Educator/Leader Notes

Leptospirosis is a bacterial disease that causes fever, abortions, and other problems in livestock. The *leptospira* bacteria pass in the urine of infected animals, which can contaminate feed and water of healthy animals. Rodents are common sources of *leptospira* bacteria.

Salmonellosis is another family of bacteria that infects many animals, causing diarrhea and even death. Feces from rodents and wild birds are sources of infection for healthy animals.

What can you do at home to avoid contaminants in your animal's feed and your animal product?

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Activity Sheet 1: *Feed Storage and Contaminants*

Notes: Suggested below are five different activities you may choose to do to illustrate Feed Storage and Contaminants. You may also choose to have the youths participate in activity sheet 3 of level 1 entitled "Feed Storage and Contaminants."

Activity	Dialogue for Critical Thinking
1. Visit a feed mill. Observe how feed is stored, conveyed, weighed, and mixed. Prepare a list of questions for the feed mill manager with the group before the visit. Ask how he/she assures the quality of incoming feed ingredients. Ask how the mill avoids cross-contamination between batches of medicated and nonmedicated feed.	
2. Invite a veterinarian or food sanitarian to talk to the group about foodborne illnesses. Or ask two or three of the youths to interview that person and report to the group.	
3. Find the book *Eleven Blue Men* by Berton Rouche in the library (Publisher: Little, Brown; 1953). Ask the members to read the story, or read it aloud, and discuss as a group.	How does the story "Eleven Blue Men" exemplify an episode of chemical contamination?
4. Ask two youths to investigate the contamination of livestock fed with polybrominated biphenyl's (PBBs) which occurred in Michigan in the 1970s. Ask them to report to the group. Discuss ways that this terrible accident could have been prevented.	The group may want to view the film "A Bitter Harvest."
5. Take a pasture walk with a livestock producer, veterinarian, or botanist. Look for plants that are poisonous to livestock.	How can these plants affect the welfare of the animal consuming them? Will these plants affect the quality of the resulting animal product?

Livestock Feeds and Feeding to Promote Animal Well-Being and Product Quality

Interview Sheet: *Feed Storage and Contaminants*

These are example questions that your group could ask during a feed mill and veterinarian/food sanitarian interview.

FEED MILL VISIT:

1. What quality specifications does the mill have for incoming feed ingredients?
2. What sort of inspection or sampling process does the mill conduct to see that quality standards are met?
3. At what sites in the mill are microbial hazards eliminated (extruders, pelleters, conditioners)? What microbiological standards does the mill have for finished products?
4. How does the mill control dust? How does the mill control rodents and other pests?
5. How is contamination between medicated feed and nonmedicated feeds avoided?

VETERINARIAN/FOOD SANITARIAN VISIT

1. What infectious diseases do you encounter most commonly? Are any of these bacteria or viruses dangerous to people who work with the animals or who process or consume animal products?
2. How do you monitor meat/milk for the presence of contaminants (testing procedures, record-keeping)? Who is responsible if an animal product is found to contain residues?
3. How does the handling that an animal receives affect the quality of the animal product? (i.e., how are bruising, dark cutters, and PSE pork avoided at the plant)
4. What steps in the handling of meat, milk, and eggs minimize or eliminate potential microbiological hazards to consumers?

Unit 5, Level 1

Educator/Leader Guide

Promoting Animal Well-Being and Product Quality Through Proper Animal Health Practices

Reading Drug Labels

Quality Assurance and Animal Care: Youth Education Program

D.E. Hansen, R. Blauwiekel, J. Smith, J.B. Jeffreys, S.S. Whiteaker

Unit V: Promoting Animal Well-Being and Product Quality through Proper Animal Health Practices

Lesson Title: *Reading Drug Labels*

This Lesson Is About: The importance of the health and well-being of animals in providing a safe and wholesome product to consumers.

What Youths Will Learn:

About the Subject:
- How to read and understand medication labels
- Importance of complying with medication labels

About Themselves:
- How they are involved in the food chain
- Their responsibilities to their animals and the consumer
- How they are responsible for the well-being of their animal

Time Needed: 45 minutes

Life Skills:
Decision-making skills
Communication skills
Team-building skills

Materials Needed:
- Critical Point #4 "Using Drugs and Animal Health Products"
- One copy/person of handouts: on pages 91-94
- One copy/person of worksheet "Reading Drug Labels"
- Sample products with labels and package inserts (e.g., injectable products, pills, pour-on insecticides, medicated feeds, and sprays)

What Do I Need to Know?	Educator/Leader Notes
ANIMAL HEALTH AND ANIMAL WELL-BEING Animal health and animal well-being should be the primary concern for everyone who chooses to own and exhibit or sell animals for food or fiber. Of equal concern is to make sure that every market animal sent to slaughter be fed and cared for in a way that will provide safe and wholesome meat and/or milk products to the consuming public. The number of animals that someone owns does not	View Critical Point #4 "Using Drugs and Animal Health Products"

What Do I Need to Know?	Educator/Leader Notes

affect in any way the responsibility he or she has to provide a wholesome food product. If a person feeds, exhibits and sells ONE hog, lamb, or beef animal that is slaughtered for human consumption, the responsibility is the same as for the person who sells thousands.

A SOUND ANIMAL HEALTH PROGRAM

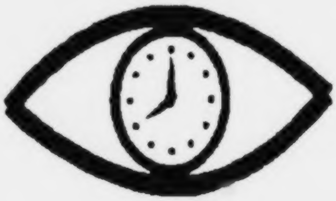
Developing a good health program for your animals will help keep them free of disease and add to their comfort. In order to avoid all drug residues and injection site damage to quality meat cuts, the first priority must be to develop and maintain a sound herd health program that reduces the risk of disease. The key ingredients of a disease prevention plan include excellent nutrition, proper animal care, maintaining clean surroundings, and using a carefully chosen vaccination program. Because all these factors may affect the health and well-being of the animal and or herd, consult with several experts including veterinarians, leader/advisors or local county extension agents for specific details on plan development.

Write down the major points of a health plan.

AVOIDING RESIDUES FOR WHOLESOME PRODUCTS

A residue is a substance (chemical or drug) that remains in an animal's body tissues after the animal has been exposed to or given that substance. The substance can enter the animal's body as a water or feed additive, as an injection or external treatment, or simply by accident. Some substances leave an animal's body tissues a few hours after exposure, but others may remain several months; some may never entirely leave certain tissues during the animal's lifetime. To protect our food supply, the Food and Drug Administration (FDA) establishes and enforces rules about acceptable levels of particular residues. For some substances, no amount of residue is acceptable. The FDA also establishes withholding times for products to ensure that unacceptable residues are not in a product when it is marketed. It is illegal to sell animals or animal products that contain residues exceeding FDA limits.

TAKE TIME



OBSERVE LABEL DIRECTIONS

AVOIDING DAMAGE FROM INJECTIONS (SHOTS) AND BRUISES

Many products used to protect against disease, treat sick animals or increase growth, cause damage to the meat even when properly injected into the muscle. The damage produces an abscess

What Do I Need to Know?	Educator/Leader Notes

or scar that may remain in the meat after the animal is slaughtered. These areas of damage must be trimmed from the meat and thrown away. Similar damage results from bruises that animals have received before being sent to slaughter. For example, it is not uncommon to find bruise damage on the jowls and sides of hogs that have been shown within a few days of slaughter. In order to avoid this problem, animal owners must not inject products into high value cuts of meat and must handle animals in ways that prevent bruising.

Have group participate in the activity "Reading Drug Labels"

READ AND FOLLOW DIRECTIONS ON MEDICATION LABELS

Before giving any drug or medication, animal caretakers should read and be prepared to follow instructions given on the label and package insert. This helps to eliminate possible residues or tissue damage in meat animals at the time of sale. To be sure you reduce the chance of reactions and minimize the risk of residues, check and follow these instructions on each label:

1. Dose (how much to give)
2. Administration (how often is it given)
3. Route of administration (how is it given)
4. Warnings (what cautions need to be considered)
5. Withholding or withdrawal time (how much time must go by before residues are reduced to safe levels)
6. Storage (how the product should be kept between uses)
7. Expiration date (how long the product can be stored and still be usable)

KEEP A WRITTEN RECORD OF TREATMENTS

It may be difficult to remember exact dates and times for withholding periods. To be sure that the proper withholding time has passed when a treated or medicated animal is offered for sale, it is best to have a written record of treatment and the date of treatment to refer to. A treatment record should include: the date the treatment was given; the name of the drug; the amount of drug given; if injected, the location of the injection; the recommended withholding period. *Keeping a written record of treatments is just as important as reading the label when it comes to minimizing the risk of residues.*

What Do I Need to Know? | **Educator/Leader Notes:**

PRESCRIPTION PRODUCTS

Sometimes a drug will be needed to treat an animal that requires a veterinarian's prescription. In this case the law requires that the veterinarian know the person, and has visited and examined the animal. Also it requires that the veterinarian be ready to come see the animal when needed and that the person is ready and willing to follow the veterinarian's directions. When the veterinarian prescribes a drug for an animal, the person must follow strict laws concerning the use of prescription drugs.

"EXTRA-LABEL" DRUG USE

A drug, used in a way that is not specifically shown on the label, is called an "Extra-Label" drug. This drug will include a veterinarian's label which includes their name, address, and phone number. It will frequently include special instructions because it is prescribed for a particular animal or a particular herd by a veterinarian who knows that animal or herd. It is illegal to use a drug in an animal in any way that is not described on the label of that drug. If used improperly, residues of the drug may remain in the animal and may be harmful to people drinking its milk or eating its meat. If a person is not sure about a certain use of a product in an animal, the person should call their veterinarian. The veterinarian may be able to give a prescription for use of that product for that particular situation.

RESPONSIBILITIES AND OBLIGATIONS OF THE MARKET ANIMAL PRODUCER

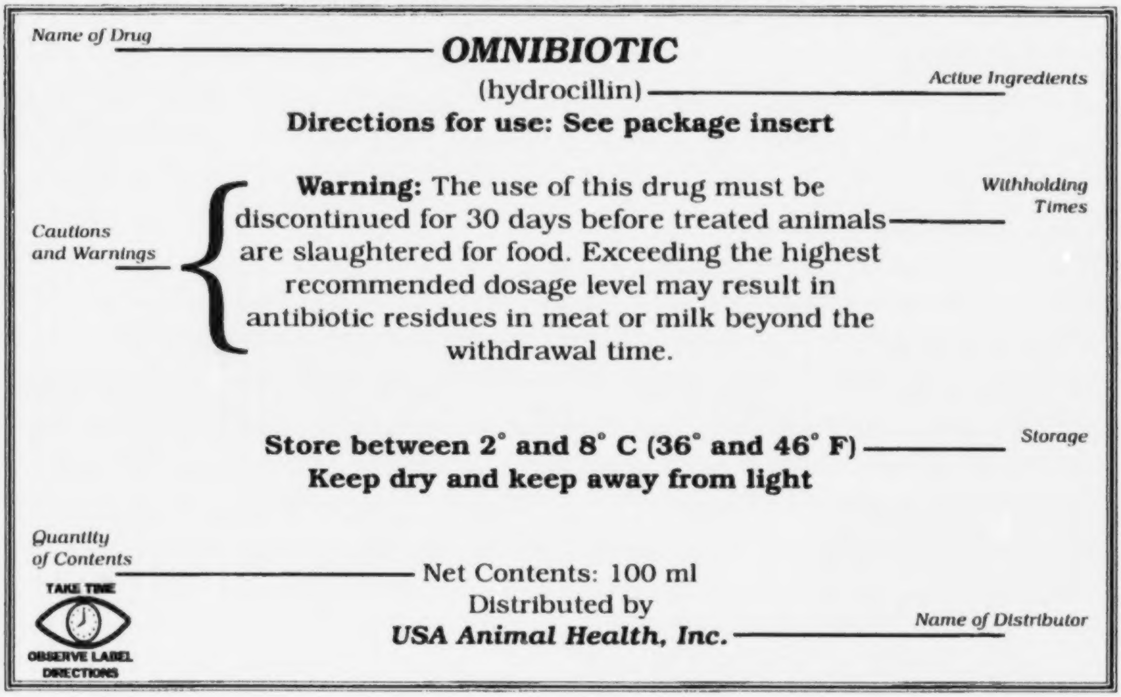
The following are examples of drug misuse that could result in residues, make you legally liable, cloud the image of livestock shows, and definitely erode consumer confidence:

- Using injectable anabolic steroid substances to enhance muscle development in the animal. This is **not** an acceptable use for steroids. There are no withdrawal times established and their effect on consumer health is not known.
- Using diuretics to reduce the water content and thus the weight of show animals before they are weighed for classification. Use of these products is not allowed without a veterinarian's prescription. Withholding time is also a problem because they are usually used within a few days of slaughter.

What Do I Need to Know?	Educator/Leader Notes
☛ Using back pour-on insecticides as a "hair set" for beef show cattle. This practice is very hazardous and a 30- to 45-day withholding time is required for most of these products.	
☛ Using tranquilizers and/or anesthetics to calm animals. Tranquilizers can be used only with a veterinarian's prescription since no tranquilizers or anesthetics are labeled for meat animal use.	Have the group participate in the activity "Reading Drug Labels"
☛ Illegal use of Clenbuterol and related compounds is a public health concern. Clenbuterol is an illegal growth-promoting drug that can induce weight gain and a greater proportion of muscle to fat in beef, sheep, and swine. It is a violation of Federal Law to import, possess or use Clenbuterol in food animals.	

EXAMPLE OF LABEL FOUND ON OUTSIDE OF CONTAINER

Medication Label



OMNIBIOTIC

(hydrocillin)

Directions for use: See package insert

Warning: The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat or milk beyond the withdrawal time.

Store between 2° and 8° C (36° and 46° F)
Keep dry and keep away from light

Net Contents: 100 ml
Distributed by
USA Animal Health, Inc.

QUALITY ASSURANCE AND ANIMAL CARE
YOUTH EDUCATION PROGRAM

EXAMPLE OF PACKAGE INSERT INFORMATION

Medication Insert

Name of Drug

OMNIBIOTIC

(Hydrocillin in Aqueous Suspension)

Active Ingredients

For use in Beef Cattle, Lactating and Non-Lactating Dairy Cattle, Swine and Sheep

Species and Animal Class

Read Entire Brochure Carefully Before Using This Product

For Intramuscular Use Only

Active Ingredients: Omnibiotic is an effective antimicrobial preparation containing hydrocillin hydrochloride. Each ml of this suspension contains 200,000 units of hydrocillin hydrochloride in an aqueous base.

Approved Uses

Indications: Cattle: Bronchitis; footrot; leptospirosis; mastitis; metritis; pneumonia; wound infections. **Swine**: Erysipelas; pneumonia. **Sheep:** footrot; pneumonia; mastitis: and other infections in these species caused by or associated with hydrocillin susceptible organisms

Recommended Daily Dosage

The usual dose is 2 ml per 100 pounds of body weight given once daily. Maximum dose is 15 ml/day.

Dosage

Body Weight	*Dosage*
100 lbs.	2 ml
300 lbs.	6 ml
500 lbs.	10 ml
750 lbs. or more	15 ml

Continue treatment for 1 to 2 days after symptoms disappear.

Route of Administration

Cautions and Warning

Caution: 1. Omnibiotic should be injected deep within the fleshy muscle of the neck or thigh. Do not inject this material in the hip or rump, subcutaneously, into a blood vessel, or near a major nerve because it may cause tissue damage. 2. If improvement does not occur within 48 hours, the diagnosis should be reconsidered and appropriate treatment initiated. 3. Treated animals should be closely observed for at least one half-hour. Should a reaction occur, discontinue treatment and administer epinephrine and antihistamines immediately. 4. Omnibiotic must be stored between 2° and 8° C (36° to 46° F). Warm to room temperature and shake well before using. Keep under refrigeration when not in use.

Storage Requirements

Warning: Milk that has been taken from animals during treatment and for 48 hours (4 milkings) after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food.

Withholding Times

Sizes Available

How Supplied: Omnibiotic is available in vials of 100 ml.

TAKE TIME

OBSERVE LABEL DIRECTIONS

Guide to Reading Drug Labels

Label on Outside of Container

Name of Drug

Active Ingredients: Chemical name(s) of what is in the drug.

Withholding Times: The time it takes for the drug/chemical to be used up by the animal's body after it has been administered (or the time it takes a drug/chemical to wear off). A ***residue*** is a substance that remains in an animal's body tissues after the animal has been exposed to that substance. The substance can enter the animal's body as a feed or water additive, as an injection or external treatment, or simply by accident. Some substances leave an animal's body tissues a few hours after exposure, but others may remain several months; some may never entirely leave certain tissues during the animal's lifetime. To protect our food supply, the Food and Drug Administration (FDA) establishes and enforces rules about acceptable levels of particular residues. For some substances, no amount of residue is acceptable. The FDA also establishes withholding times for products to ensure that unacceptable residues are not in a product when it is marketed. It is illegal to sell animals or animal products that contain residues exceeding FDA limits.

Cautions and Warnings: Tells things to be cautious about when using the product. Examples: a) Do not give to certain kinds of animals, b) do not give too much, c) pay attention to withholding times (see above).

Storage: You may not obtain the performance you expect from the drugs and chemicals you have if the expiration date has passed, if the storage temperature is too hot or too cold, or if the products have been exposed to air or light. All the information you need to meet these requirements should be on the label of the product container. Check the expiration date on the label to be sure it has not expired. Buy only quantities that can be used in a short time.

Quantity of Contents: Tells how much is in the container. Usually in metric units [liquid measure: 1 fluid ounce = 29.6 milliliters (ml); dry measure: 1 pint = 551 milliliters (ml)].

Name of Distributor

Guide to Reading Drug Labels

Package Insert Information

(sometimes found on outer label)

Species and Animal Class: The species and animal class in which the drug is to be used.

Approved Uses: The situation for which the drug is to be used. Indicates the particular type of animal, condition, illness, etc.

Dosage: How much to give and how often/how many times given.

Route of Administration: (How is the product given to the animal?)
Basically, there are three routes of administering medications:

1. *Oral Route*. Administering drugs through the mouth. Tablets, pills, capsules and liquid medications are easily administered orally. A drenching tube, balling gun, or oral dosage syringe is usually used to place the liquid or pill at the base of the tongue at the back of the mouth. Make sure the medication goes down the throat and the animal swallows it. Take care the animal is not choked by the medication going down the trachea (windpipe). You can also administer medications in the animal's feed or water.

2. *Topical Route*. Applying the medication to the skin or to the mucous membranes of the eyes, ears, nasal passages, or reproductive tract. Such medications are available as ointments, aqueous solutions, powders, and aerosols. Do not allow these products to come in contact with the animal's eyes, nose, reproductive tract, or mouth unless it is specifically formulated for that use.

3. *Injectable Route*. Administering the drug directly into an animal's body with a syringe and needle. Injections are the most common method to administer medications. The label will specify which of the following injection methods to use.

    Subcutaneous (sub Q) injections are accomplished by inserting the needle *just under the skin and not into the muscle*! This is important because sub Q injectables are designed for a slower rate of absorption or are highly irritating to muscle tissue.

    Intramuscular (IM) injections are the most commonly used. This is accomplished by inserting the needle straight into the skin and deep into the muscle.

    Intravenous (IV) injections are sometimes used. Some medications are labeled for intravenous injection only, because they are strong irritants to muscle tissue and can cause tissue damage. The IV route of administration provides a rapid means of getting the medication into the system of a sick animal as well as eliminating the chance of tissue damage. IV injections are given directly into the bloodstream.

Promoting Animal Well-Being and Product Quality Through Proper Animal Health Practices

Activity Sheet: *Reading Drug Labels*

Activity

DIRECTIONS

△E Have the group break into teams of two to three people. Provide each team with a copy of the example labels found on the outside and inside of medicated products. Using the information contained in the guide to reading drug labels, walk the group through the information contained on their example labels (both inside and outside labels). Once you have explained this information, hand out the worksheet on reading drug labels and a sample drug product (e.g., bottle of penicillin, bottle of lutalyse, etc.) and have the teams complete the worksheet using the information from their drug product. When this activity is complete, you may wish to provide them with copies of the guides to reading drug labels for home use.

DIRECTIONS

△E To demonstrate what a residue is, have the group break into groups of 2 to 3 people. Each group should have a glass of chocolate milk, and some cold water available. Have each group pour out the chocolate milk from their glass. Fill the glass with cold water and pour out. Repeat, having each group decide if there is any residue left on the glass between fills. Continue until there is no residue.

Dialogue for Critical Thinking

Observing* △E*: What new information did you learn by reading the label?

Relating* △R*: Was the information easy to find? Why or why not?

Inferring* △A*: What happens when someone doesn't read and follow label information?

Applying* △A*: What steps will you take next time you use a pesticide or medication? Can you think of other tasks you do at home or school for which it is important to read the directions before you start?

Observing* △E*: Is there anything left on the sides of the glass?

Comparing* △R*: How much "residue" is left on the side of the glass compared to last time? How many times did it take you until you couldn't see any more "residue?"

Applying* △A*: How can you make sure your animal doesn't have any residues from medication when it is slaughtered?

Critical Answers for Dialogue Questions

- Injury to the animal, possible residues in animal products, and injury to humans can result from not reading and following label information.
- Always read the label before using a product.
- It is important to read directions before answering a question, making cookies, etc.
- To make sure an animal doesn't have any harmful residues from medication when slaughtered, adhere to the withdrawal time for the medication. The withdrawal time for medication is analogous to the water in the glass. Each glass of water took some residue with it, just like each day of withdrawal time takes some drug residue with it.

On Your Own

Check labels of all animal health products in your home. Make sure the products are approved for the species and type of animals that you have. Discard all products that have exceeded expiration dates. If you find nonapproved products, contact a veterinarian for instructions.

Worksheet: Reading Drug Labels

(Use one sheet for each product analyzed)

ANSWER THE FOLLOWING QUESTIONS:

1. What is the name of the product?

2. For which species and for what type of animal is this product approved?

3. For what uses is this product approved?

4. What is the proper dosage?

5. How should the product be administered (route of administration)?

6. Is there a withholding period? If so, if the animal was treated today, how soon could it or its products (e.g., milk, eggs) be marketed?

7. What is the expiration date?

8. What storage directions are indicated?

Unit 5, Level 2

Educator/Leader Guide

Promoting Animal Well-Being and Product Quality Through Proper Animal Health Practices

Administering Injectable Products

Quality Assurance and Animal Care: Youth Education Program

D.E. Hansen, R. Blauwiekel, J. Smith, J.B. Jeffreys, S.S. Whiteaker

Unit II: Promoting Animal Well-Being and Product Quality Through Proper Animal Health Practices

Lesson Title: *Administering Injectable Products*

This Lesson Is About: The importance of the health and well-being of the animal and providing a safe and wholesome product to the consuming public

What Youths Will Learn:

About the Subject:
- How to properly administer injectable products
- Importance of complying with medication labels
- The responsibilities of an animal producer

About Themselves:
- How they are involved in the food chain
- Their responsibilities to their animals and the consumer
- How they can improve their animals' health plan

Time Needed: 45 minutes

Life Skills:
Decision-making skills
Communication skills
Team Building skills

Materials Needed:
- Critical Point #5 "Injections and Food Quality"
- One copy/person of handout #4
- Syringes, needles, oranges, colored water (preferably in medicine bottles) - enough for youths to have one for each person or one per pair of youths.

What Do I Need to Know:	Educator/Leader Notes
A SOUND ANIMAL HEALTH PROGRAM Developing a good health program for your animals will help keep them free of disease and add to their comfort. In order to avoid all drug residues and injection site damage to quality meat cuts, the first priority must be to develop and maintain a sound herd health program that reduces the risk of disease. The key ingredients of a disease prevention plan include excellent nutrition, good animal care, keeping animal surroundings clean and using a	View Critical Point #5 "Injections and Food Quality"

What Do I Need to Know:	Educator/Leader Notes

carefully chosen vaccination program. Because all these factors may affect the health and well-being of the animal and or herd, consult with several experts including veterinarians, leader/ advisors or local county extension agents for specific details on plan development.

AVOID DAMAGE FROM INJECTIONS (SHOTS) AND BRUISES

Many products used to protect against disease, treat sick animals or increase growth, cause damage to the meat even when properly injected into the muscle. The damage produces an abscess or scar that may remain in the meat after the animal is slaughtered. These areas of damage must be trimmed from the meat and thrown away. Similar damage results from bruises that animals have received before being sent to slaughter. For example, it is not uncommon to find bruise damage on the jowls and sides of hogs that have been shown within a few days of slaughter. In order to avoid this problem, animal owners must not inject products into high value cuts of meat and must handle animals in ways that prevent bruising.

When products are injected into muscle, the muscle fibers are forced apart causing damage. The more volume of product injected, the more tissue is damaged. The more "foreign" the product is to live muscle, the longer it takes to be absorbed into the body.

PROPER ADMINISTRATION OF INJECTABLE PRODUCTS

For any injectable product to be effective in preventing disease, treating sickness, or increasing productivity it must be done correctly. This means the proper location, according to label or prescribed dosage, and by the proper route of administration. If done incorrectly, an injection can cause damage to the tissue and lead to carcass trim (meat that must be trimmed from the carcass before processing) in finished meat animals. Encourage members to be careful, pay attention to proper injection procedures, and don't hesitate to ask for help if they need it or to defer to an expert (i.e., parent, leader/teacher, veterinarian) if necessary.

CLEANLINESS

Cleanliness and sterile techniques are of extreme importance in the administration of all vaccines and medicines. Injections given in dirty or wet conditions and without proper sanitation can cause abscesses at the injection site. Abscesses can also be caused by the product itself even with sterile techniques. Surface abscesses can result in significant carcass trim at the processing plant. Injections given without proper sanitation may cause cross-contamination of disease organisms

What Do I Need to Know?	Educator/Leader Notes
from one animal to another. Clean and sterile needles and syringes should be used at all times. Sterile disposable needles are convenient and adequate for most procedures. They will remain sterile until the seal is broken. To avoid contamination, clean needles and non-disposable syringes with soap and hot water and sterilize before use. Use a disinfectant tray and sponge to disinfect the needle between each animal. Change the disinfectant solution and clean the sponge if either become visibly dirty. **Do not use chemical disinfectants with modified live vaccines because they will kill the vaccine**, thus decreasing or eliminating immunity. Using a nurse needle in the bottle also helps prevent contamination from animal to animal. A sterile needle is used to fill the syringe and another needle is attached to the syringe for injecting the animal. Finally, injecting animals when they are wet increases the possibility for contamination. During bad weather, extra care should be taken to see that the injection site is free of manure and dirt.	
PROPER RESTRAINT OF THE ANIMAL Adequate restraint of the animal is extremely important. Proper administration of animal vaccines and medicines cannot be accomplished without good restraint. Excessive movement of the animal may botch an injection. Adequate restraint is essential for the welfare of the animal as well as for the people handling it.	***If the animal is not controlled, the needle may slip causing injury to someone or causing the injection to be administered improperly.***
ADMINISTERING INJECTABLE MEDICATIONS Basically, there are three routes of administering medications: 1. *Oral Route*. Administering drugs through the mouth. Tablets, pills, capsules and liquid medications generally are easily administered orally. A drenching tube, balling gun, or oral dosage syringe is usually used to place the liquid or pill at the base of the tongue at the back of the mouth. Make sure the medication goes down the throat and the animal swallows it. Take care the animal is not choked by the medication going down the trachea (windpipe). You can also administer medications in the animal's feed or water. 2. *Topical Route*. Applying the medication to the skin or to the mucous membranes of the eyes, ears, nasal passages, or reproductive tract. Such medications are available as ointments, aqueous	

What Do I Need to Know?	Educator/Leader Notes

solutions, powders, and aerosols. Do not allow these products to come in contact with the animal's eyes, nose, reproductive tract, or mouth unless it is specifically formulated for that use.

3. *Injectable Route*. Administering the drug directly into an animal's body with a syringe and needle. Injections are the most common method used to administer medications. The label will specify which injection technique to use (see below).

Injections done improperly can cause many problems. Always try to give injections under clean, dry, and sanitary conditions. Restrain the animal properly before administering injections. Never inject a substance meant to be given orally or externally.

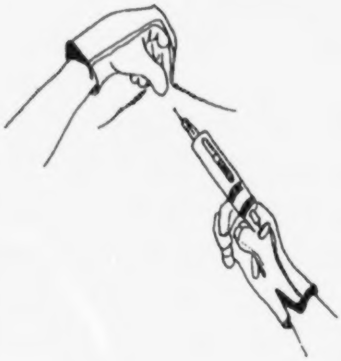
Select the injection site carefully. Selecting an injection site in the neck or lower thigh will help prevent excessive trim and the possible loss of expensive meat cuts. Always use needles that are no larger than necessary to adequately complete the injection. Finally, be sure the volume of solution injected is appropriate for the type of injection.

INJECTION TECHNIQUES

Subcutaneous (Sub Q) injection is accomplished by inserting the needle just **under the skin and not into the muscle!** The "tent" method is the best method to use. This method is accomplished by pulling the skin away from the animal's body and inserting the needle into the fold of the skin and not into the muscle. The loose skin on either side of the neck is an excellent site for this injection. (Note: It is important to restrain the animal properly so the needle doesn't slip). Use a needle that is less than 1 inch long.

Intramuscular (IM) injection is accomplished by inserting the needle straight into the skin and deep into the muscle. A 1-inch, 16- or 18-gauge, needle works the best. A 1 1/2-inch needle may be needed for large cows and bulls. After the needle is placed into the muscle the injection can be made. Be sure the needle is held in place for at least two seconds before removing. This cuts down on medication "leak back." Neck muscles are preferred as injection sites. A secondary site for IM injections is the back of the thigh. Inject straight in, not from the side.

There are three ways to inject products:
- ***Subcutaneous (SubQ)***
- ***Intramuscular (IM)***
- ***Intravenous (IV)***



What Do I Need to Know?

Fourteen gauge needles are not recommended for IM injections. (Note: Intramuscular injections for all injectable products should be avoided whenever other labeled routes of administration are available).

Intravenous (IV) injection is given directly into the bloodstream. Normally the jugular vein in the animal's neck is the best site. Proper IV injections require skill because the vein must be located. Penetration depth is also critical so that the medication is directed into the bloodstream. Do not attempt IV injections unless the animal is properly restrained and you have proper training.

Intramammary (IU) injection is given directly into the udder through the streak canal at the end or opening of the teat. The teat end must be cleaned and disinfected before the injection procedure is begun. Use specifically made blunt end needles called teat canulas for injections, otherwise excessive tissue damage may occur. After the teat end has been prepared, gently insert the teat canula 1/4 inch into the teat opening and inject the medication into the milk holding compartment of the udder. You may massage the base of the udder above the injected teat to aid in drug dispersion inside the udder.

HOW MUCH TO INJECT

The volume of solution injected at one site will directly influence tissue damage, scar tissue and the potential for abscesses. If no specific recommendations are given on the label, a good rule of thumb is to limit volume to no more than 10 cc at any intramuscular site in a 1,000-pound animal and 5 cc at any site in a young animal or one that weighs less than 400 pounds. If a product must be given several times over a period of a few days (an antibiotic, for example), vary the injection site from day to day.

KEEP A WRITTEN RECORD OF TREATMENTS

It may be difficult to remember exact dates and times for withholding periods. To be sure that the proper withholding time has passed when a treated or medicated animal is offered for sale, it is best to have a written record of treatment and the date of treatment to refer to. A treatment record should include: the date the treatment was given; the name of the drug; the amount of drug given; if injected,

Educator/Leader Notes

Vaccines are usually given SubQ or IM. SubQ is preferred to avoid muscle damage.

Antibiotics may be injected SubQ, IV, or IM. FOLLOW THE DIRECTIONS ON THE LABEL.

To minimize muscle damage, minimize the volume of the product. 10cc per site is the maximum recommended. If more than 10cc must be given, administer in sites at least 5" apart.

What Do I Need to Know?	Educator/Leader Notes

the location of the injection; and the recommended withholding period. *Keeping a written record of treatments is just as important as reading the label when it comes to minimizing the risk of residues*.

NEEDLE DO'S AND DON'TS

Do Use the Correct Needle. Adjust the needle length according to the injection method and the size of the animal. Using needles larger than necessary contributes to possible abscess problems and leakage of the medication from the injection site when the needle is removed. A 14-gauge needle is **not** recommended - it is twice the diameter of a 16 gauge, which increases the risk of leak back and tissue damage (**SubQ**: 16- or 18-gauge, 1/2" to 3/4" long. **IM**: 16- or 18- gauge, 1" to 1 1/2" long).

Do Clean the Injection Site. Injecting into a spot that is damp, muddy or covered with manure greatly increases the risk of infection.

Do Change Needle Frequently. It may seem expensive at the time, but the alternative could be much more costly. Also if a needle develops a bend or burr, discard it immediately, because it will tear the tissue.

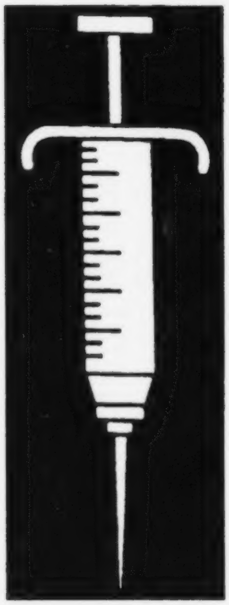
Do Mark and Separate Syringes. Use different syringes for modified live vaccines and for bacterins or killed products. It helps to mark the modified live syringes with red paint or tape and keep them separate.

Don't Use Dull, Bent, and Barbed Needles. They will cause more abscesses and tissue damage than will sharp needles.

Don't Use Disinfectants when Cleaning Modified Live Vaccine Syringes. The disinfectant could destroy modified live vaccines that you later put in the same syringe.

Don't Mix Products. If traces of bacterin are left in a syringe that is later used for a modified live product, the bacterin could destroy the modified live vaccine. Also, mixing products can damage carcass tissue.

Don't Spread Infection by going back into the vaccine bottle with the same needle you use to vaccinate. If the needle is contaminated from an infected animal, you'll also contaminate the vaccine and possibly the next animals.



Promoting Animal Well-Being and Product Quality through Proper Animal Health Practices

Activity Sheet: *Administering Injectable Products*

Activity	Dialogue for Critical Thinking
DIRECTIONS E Review proper injection procedures and – using an orange – demonstrate loading a syringe, and performing SubQ and IM injections. Use different colored water for SubQ and IM injections to more easily demonstrate the difference between the two methods. After the injections are made, cut the orange open to show where the water was actually injected. Once you have demonstrated the injection procedure, have the group break up into pairs. Each group should have an orange, plastic needle syringe, and two different colors of water. If possible, the colored water should be provided in medicine bottles so that the youths may practice loading a syringe. Have the youths perform both IM and SubQ injections on their oranges and share the results with the rest of the group.	***Observing* E:** Where did the "medication" go when you attempted a SubQ injection versus an IM injection? Was there any air in your syringe? ***Relating* R:** What problems or difficulties did you encounter? Which injection was most difficult to administer? ***Inferring* A:** What would happen if the injections were done incorrectly? ***Applying* A:** What steps do you need to take next time you perform your own injections? What injections have you given to your animals in the past? What injections will you give to your animals now that you know how? What injections will you ask someone else to perform? How will you decide who should give the injections and why? How do you plan to improve your animal health program by using what you have learned in this lesson?

You May Want To

- Invite a veterinarian to demonstrate – on real animals – proper injection procedures. To follow up, students could inject oranges or real animals.
- Include a discussion regarding injection site selection and quality assurance. Posters of animals or real animals can be used to indicate location of injection sites.
- Contact area butchers or slaughter houses to secure samples of meat that have been injected improperly (abscessed, bruised, etc.).

Critical Answers for Dialogue Questions

- Injections done improperly can cause many problems both with animal well-being and product quality.
- Always read the label before using a product. Always give the injections under clean, dry, and sanitary conditions. Restrain animal properly before administering injections. Selecting an injection site in the neck or lower thigh will help prevent excessive trim and possible loss of expensive meat cuts.

Handout: *Proper Injection Procedures*

WHAT DO I NEED TO KNOW?

Basically, there are three routes of administering medications:

1. *Oral Route.* Administering drugs through the mouth. Tablets, pills, capsules and liquid medications generally are easily administered orally. A drenching tube, balling gun, or oral dosage syringe is usually used to place the liquid or pill at the base of the tongue at the back of the mouth. Make sure the medication goes down the throat and the animal swallows it. Take care so that the animal is not choked by the medication going down the trachea (windpipe). You can also administer medications in the animal's feed or water.

2. *Topical Route.* Applying the medication to the skin or to the mucous membranes of the eyes, ears, nasal passages, or reproductive tract. Such medications are available as ointments, aqueous solutions, powders, and aerosols. Do not allow these products to come in contact with the animal's eyes, nose, reproductive tract, or mouth unless it is specifically formulated for that use.

3. *Injectable Route.* Administering the drug directly into an animal's body with a syringe and needle. Injections are the most common method to administer medications. The label will specify which injection technique to use (see below).

Injections done improperly can cause many problems. Always try to give injections under clean, dry, and sanitary conditions. Restrain the animal properly before administering injections. Never inject a substance meant to be given orally or externally. Select the injection site carefully. Selecting an injection site in the neck or lower thigh will help prevent excessive trim and the possible loss of expensive meat cuts. Always use needles no larger than necessary to adequately complete the injection. Finally, be sure the volume of solution injected is appropriate for the type of injection.

INJECTION TECHNIQUES:

Subcutaneous (SubQ) injection is accomplished by inserting the needle just **under the skin and not into the muscle!** The "tent" method is the best method to use.

POINTS TO EMPHASIZE

There are four ways to inject products:

- ***Subcutaneous (SubQ)***
- ***Intramuscular (IM)***
- ***Intravenous (IV)***
- ***Intramammary (IU)***

WHAT DO I NEED TO KNOW?

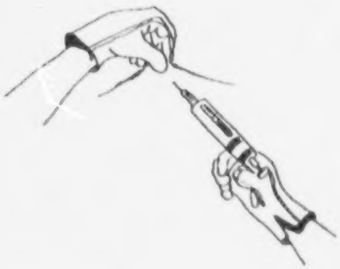
This method is accomplished by pulling the skin away from the animal's body and inserting the needle into the fold of the skin and not into the muscle. The loose skin on either side of the neck is an excellent site for this injection. (Note: It is important to restrain the animal properly so the needle doesn't slip). Use a needle that is less than 1 inch long. (Note: The SubQ route should be the only route of injection for clostridials).

Intramuscular (IM) injection is accomplished by inserting the needle straight into the skin and deep into the muscle. A 1-inch 16- or 18-gauge needle works the best. A 1 1/2-inch needle may be needed for large cows and bulls. After the needle is placed into the muscle the injection can be made. Be sure the needle is held in place for at least two seconds before removing. This cuts down on medication "leak back." Neck muscles are preferred as injection sites. A secondary site for IM injections is the back of the thigh. Inject straight in, not from the side. Fourteen gauge needles are not recommended for IM injections. (Note: Intramuscular injections for all injectable products should be avoided whenever other labeled routes of administration are available).

Intravenous (IV) injection is given directly into the bloodstream. Normally the jugular vein in the animal's neck is the best site. Proper IV injections require skill because the vein must be located. Penetration depth is also critical so that the medication is directed into the bloodstream. Do not attempt IV injections unless the animal is properly restrained and you have proper training.

Intramammary (IU) injection is given directly into the udder through the streak canal at the end or opening of the teat. The teat end must be cleaned and disinfected before the injection procedure is begun. Use specifically made blunt end needles called teat canulas for injections, otherwise excessive tissue damage may occur. After the teat end has been prepared, gently insert the teat canula 1/4 inch into the teat opening and inject the medication into the milk holding compartment of the udder. You may massage the base of the udder above the infected teat to aid in drug dispersion inside the udder.

POINTS TO EMPHASIZE



Vaccines are usually given SubQ or IM. SubQ is preferred to avoid muscle damage.

Antibiotics may be injected SubQ, IV, or IM. FOLLOW THE DIRECTIONS ON THE LABEL.

To minimize muscle damage, minimize the volume of the product. 10cc per site is the maximum recommended. If more than 10cc must be given, administer in sites at least 5" apart.

WHAT DO I NEED TO KNOW?

HOW MUCH TO INJECT. The volume of solution injected at one site will directly influence tissue damage, scar tissue and the potential for abscesses. If no specific recommendations are given on the label, a good rule of thumb is to limit volume to no more than 10 cc at any intramuscular site in a 1000-pound animal and 5 cc at any site in a young animal or one that weighs less than 400 pounds. If a product must be given several times over a period of a few days (an antibiotic, for example), vary the injection site from day to day.

NEEDLE DO'S AND DON'TS.

Do Use the Correct Needle. Adjust the needle length according to the injection method and the size of the animal. Using needles larger than necessary contributes to possible abscess problems and leakage of the medication from the injection site when the needle is removed. A 14-gauge needle is **not** recommended - it is twice the diameter of a 16 gauge, which increases the risk of leak back and tissue damage (**SubQ**: 16- or 18-gauge, 1/2" to 3/4" long. **IM**: 16- or 18- gauge, 1" to 1 1/2" long).

Do Clean the Injection Site. Injecting into a spot that is damp, muddy or covered with manure greatly increases the risk of infection.

Do Change Needle Frequently. It may seem expensive at the time, but the alternative could be much more costly. Also if a needle develops a bend or burr, discard it immediately because it will tear the tissue.

Do Mark and Separate Syringes. Use different syringes for modified live vaccines and for bacterins or killed products. It helps to mark the modified live syringes with red paint or tape and keep them separate.

Don't Use Dull, Bent, and Barbed Needles. They will cause more abscesses and tissue damage than will sharp needles.

Don't Use Disinfectants when Cleaning Modified Live Vaccine Syringes. The disinfectant could destroy modified live vaccines that you later put in the same syringe.

POINTS TO EMPHASIZE

WHAT DO I NEED TO KNOW?

Don't Mix Products. If traces of bacterin are left in a syringe that is later used for a modified live product, the bacterin could destroy the modified live vaccine. Also, mixing products can damage carcass tissue.

Don't Spread Infection by going back into the vaccine bottle with the same needle you use to vaccinate. If the needle is contaminated from an infected animal, you'll also contaminate the vaccine and possibly the next animals.

POINTS TO EMPHASIZE

Unit 6, Level 1

Educator/Leader Guide

Public Perception of Animal Agriculture

Care of Animals in Public Settings

Quality Assurance and Animal Care: Youth Education Program

S.S. Whiteaker, J.R. Busboom, J.A. Newman

Unit VI: Public Perception of Animal Agriculture

Lesson Title: *Care of Animals in Public Settings*

This Lesson Is About: How people's feelings towards raising animals for food are affected by care of animals in public settings.

What Youths Will Learn:

About the Subject:
- The effect of their actions on public perception of agriculture
- Importance of creating a positive impression

About Themselves:
- That they are responsible for the well-being of their animals
- That they affect how people perceive animal agriculture

Time Needed: 45 minutes

Life Skills: Decision-making skills
Communication skills

Materials Needed: Critical Point #7
"Where Does My Hamburger Come From?"

What Do I Need to Know?	Educator/Leader Notes
People's feelings towards raising animals for food are affected by many things. An animal producer plays an important part in how the public sees animal agriculture. Not everyone thinks it's O.K. to raise animals for food. Most people agree that animals should be given the best care possible. These personal beliefs are affected by experiences that people have had in the past. Future experiences will affect how people think about raising animals for food.	View Critical Point #7 "Where Does My Hamburger Come From?"
Animal producers and exhibitors have a responsibility to make sure that people have good feelings about how animals are raised and shown. People want to make sure the animals are	

What Do I Need to Know?	Educator/Leader Notes
treated well. They want to make sure that adequate water, feed, and comfort are provided.	
Also, people who eat meat want to make sure that it is not contaminated with synthetic hormones, muscle-enhancing drugs, antibiotics, or pesticides. It is the member's job as a producer of animals to meet these people's expectations.	Write down important points on a board, flip chart, or overhead.
Attitudes towards animal agriculture can be greatly influenced by animal events such as the local fair. In addition to your animal being on display, the way you raise and treat your animal is also on display. For this reason, members should do everything they can to create a positive public feeling towards them and their animals. An adequate supply of quality food, bedding, and water as well as proper animal handling practice both at home and at the show fosters positive impressions.	Have the group participate in the activity "Planning Educational Displays."
Individual members play the most important role in making sure that the food they produce is drug-free and the way in which they produced it was good for the animal.	
The young producer has access to a unique forum to educate the public. The local fair (and the animal barns in particular) attracts a diverse population of people whose knowledge of animal production practices varies greatly. A young producer can inform the public about food safety and quality practices followed by today's agribusiness. Educational displays and demonstrations are excellent ways to impart information to a public who would not otherwise obtain the information. Having youths teach people about animals and animal agriculture allows them to play a positive role in informing the public and leads to positive public impressions towards animal agriculture and youth livestock programs.	

Unit VI: Public Perception of Animal Agriculture

Activity Sheet 1: *Planning Educational Displays*

Activity	Dialogue for Critical Thinking
In this activity, your group should decide on a topic for an educational display. Some possible topics are: • Animal behavior and animal handling • Total quality management • HACCP • Feed storage • Feed and water quality • Animal health • Animal stress	***Communicating*** △: What do you think the public should know about animal agriculture? Of these topics, which one would you like to educate the public about?
The educational display you develop may stimulate thought, teach facts, or show a process. It may also result in action on the reader's part. The educational display could be a poster, a tabletop display, a mobile, or a large display. Often displays have less than 60 seconds to get their messages across, so planning is important. Have your group choose a subject area for the display. Once the group has decided on the subject area help the group select a title that will: • Identify the exhibit (tell the content) • Be short and simple (4 to 5 short words) • Attract attention (motivate audience to continue reading)	***Organizing*** △: What form of educational display should we make (e.g., poster, table top display, mobile)? What should we call the display?
Once a title has been chosen, construct an outline of the subject matter that the group would like to present. At this point, you may want to break the youths into small groups, each developing one or two aspects of the outline. When the subject matter to be included in the display is developed, have the groups choose attention-grabbing techniques to display the information. Some **attention grabbing techniques** are: • Actual objects • Models • Illustrations • Motion • Lighting • Color • Contrasts	What things about our topic do we want the public to know? (helps group to create an outline) What types of things should we use to grab the public's attention?

Activity	**Dialogue for Critical Thinking**

Lettering in the display should be:

- Consistent in style
- Horizontal
- Bold enough to be read easily from a distance; consider line thickness as well as letter size

Letter Size for Visibility
(with good light, good eyes, and good color)

Viewing Distance	*Min. Letter Size*	*Line Thickness*
10 feet	1/2 inch	3/32 inch
20 feet	3/4 inch	1/8 inch
30 feet	2 inches	5/16 inch

- When selecting colors to use in the display remember that color can turn even an uninteresting display into one that attracts and teaches.
- Limit to 2 to 3 colors, with 1 being dominant.
- Neutral or soft colors are best for backgrounds (grays, light greens, light blues, pale yellows, white).
- Bright or intense colors are best for smaller areas or the center of interest (bright yellows, reds, oranges).
- Dominant colors are best for the lettering (black, dark blue).
- Combinations such as black on yellow or red on white are easier to read than those that are complementary-red on green or yellow on violet.

When selecting material, keep the following points in mind:

Backgrounds-cardboard, wallboard, plywood, pegboard, fabrics, corrugated paper

Illustrations-photos, cutouts, drawings, cartoons, objects

Lettering-use felt-tipped pens, speed-ball pens with wide points, brushes, stencils, cutout letters, or rubber stamps for lettering. Keep lettering simple, clear and well spaced. Mount cutout letters with a quick-drying glue.

Activity	Dialogue for Critical Thinking
Fasteners-Use casein glue, rubber cement, staples, tacks, masking tape, or cellophane tape. Rubber cement is best for mounting photographs, paper, or thin cardboard and cutout letters. Casein glue is probably most convenient and economical. Determine **arrangement**. Strive for a simple, uncluttered effect. • Lettering is usually dominant • Read from left to right; top to bottom • Lead eye to center of interest (but not dead center)	***Comparing* R*:*** Do you think the display conveyed the information we set out to communicate?
Once the display is finished (or perhaps after the event) ask the youths how they feel about how the display turned out.	***Relating* R*:*** Where will be the most effective place to put the display?
Material adapted from EM4573, 4-H Educational Display Guidelines, Washington State University Cooperative Extension.	***Inferring* A*:*** How does creating a display affect consumer perceptions of animal agriculture?

Unit 6, Level 2

Educator/Leader Guide

Public Perception of Animal Agriculture

Activists and Talking to the Media

Quality Assurance and Animal Care: Youth Education Program

S.S. Whiteaker, J.R. Busboom, J.A. Newman

Unit VI: Public Perception of Animal Agriculture

Lesson Title: *Activists and Talking to the News Media*

This Lesson Is About: How people's feelings towards raising animals for food are affected by care of animals in public settings.

What Youths Will Learn:

About the Subject:

- The effect of their actions on public perception of agriculture
- Importance of creating a positive impression
- Importance of a well-informed spokesperson

About Themselves:

- That they are responsible for the well-being of their animals
- That they affect how people feel about animal agriculture

Time Needed: 45 minutes

Life Skills: Decision-making skills
Communication skills

Materials Needed: Critical Point #7
"Where Does my Hamburger Come From?"

What Do I Need to Know?	Educator/Leader Notes
Human conflicts arise when a situation or condition exists in which someone or something is threatened.	
Animal Welfare/Rights problems exist when people become aware that animals are handled (raised) in a way in which they do not like.	View the video segment Critical Point #7 "Where Does My Hamburger Come From?"
Animal Welfare/Rights problems become issues when two or more people or groups of people disagree about the scope, seriousness, or the appropriate solution to the problem. The position taken by a person on an issue is directly related to *personal beliefs and values*. Beliefs are ideas that a person believes are true, even though in reality they may	

What Do I Need to Know:	Educator/Leader Notes
not be true. Often a person's beliefs are strongly related to his or her values. A *value* is the comparative worth a person places on something. Each individual has personal values that develop in response to past experiences. Values may involve money, beauty, prestige, or other things. Beliefs and values help people make decisions and choices when the possible answers are not clearly right or wrong.	
Opinions are based on logic, emotions, or philosophy. Often opinions can be based on misinformation.	
(The above background information is borrowed from: Alaska Model Science Curriculum, AK Department of Education, Juneau, AK)	
People referred to as animal activists often don't think it is right to raise animals for food. These people may attend animal events to protest against raising animals.	Jot down important points on a board, flip chart, or overhead.
Clubs should plan ahead to handle situations such as these. Before the animal event takes place, appoint someone as a spokesperson to respond to animal activists. Conduct a meeting in advance of the animal event. Invite all parents, fair management and employees, youth club advisors and members. Also consider inviting your county extension personnel. At this meeting establish a rule that only one person is authorized to speak on behalf of the event (e.g., fair or show). A backup spokesperson should also be chosen. These people should be even-tempered, knowledgeable and should field questions from the media and any outspoken or confrontational animal activists.	
Clubs should also consider appointing someone to monitor animal handling.	
This person should inspect livestock housing areas for overcrowding, frequency of stall cleaning, amount of bedding, adequate food and water, as well as methods of restraint and handling.	
An action/reaction plan should be in place for all members and parents in the event that picketers or protesters appear at the fair. Do not confront demonstrators. Animal rights activists want publicity. They get it by starting a confrontation.	

What Do I Need to Know?	Educator/Leader Notes
Getting into an argument or "shouting" match is what they want. Confronting them will not change their mind and will only draw more attention to their efforts. Calmness and tolerance are the most effective attitudes to take towards animal rights picketers or demonstrators. If animal activists badger or harass youths, monitors should call for the spokesperson to deal with the activists. If protesters are disrupting your activities or exhibition area, ask them to stop. If this does not work, request assistance from event officials, security, or call the police. Remember, no matter how annoying, the activists have a Constitutional First Amendment right to be on public property as long as they obey the law.	Have the group participate in the activity "Animal Activists and Talking to the Media."
A reporter may want to ask a youth about his or her particular animal project. In this case the youth should respond freely. However, if the reporter wants to know about other youth projects or youth groups in general, the youth should suggest that the reporter talk to the show spokesperson. If you don't feel comfortable answering a question (i.e., a hypothetical situation), tell the reporter that. Don't be evasive. Be as honest and forthcoming as possible, while still being in charge of the information you want to impart. Remember everything you say is fair game. Nothing is "off the record." An interview is not necessarily over because the reporter turns off the tape recorder, camera, or closes the notebook.	

Unit VI: Public Perception of Animal Agriculture

Activity Sheet 2: *Animal Activists and Talking to the Media*

In this activity, youths are assigned roles that they will act out in a fair board meeting role-play situation. You will act as the chairperson, guiding the discussion. Depending on the maturity and skill of your group, you may need to spend time reviewing the cards and giving examples of how to 'play the role'. The directions below specifically describe how to run the role-play. The objective of the role-play is to make recommendations for what the fair board should do.

Activity	Dialogue for Critical Thinking
DIRECTIONS △ There are six different fair board meeting role play cards. Copy and cut enough cards so that each member in your group can have one. (It is OK for more than one youth to have the same role.)	
Choose an animal welfare/rights concern that the group would like to use for the role-play. You can use one from the list of concerns shown at the end of this lesson, or come up with your own.	***Communicating*** △**:** Which concern would you like to discuss?
Review the facts describing the chosen concern with the group by doing the following: 1. Divide the group into pairs, with each pair having one or two fact cards. 2. Instruct the pairs to describe a fact card to their partners. 3. Bring the groups together and ask each youth to share with group what they think the fact card represents.	
Randomly hand out the role-play cards.	
Allow time for the youths to read the cards and ask many questions (privately to you). Youths should keep the information on the cards to themselves.	
To begin the role play: Read or have one of the youth volunteers read the role-play scenario description to the group.	
Begin the role play and continue, preferably, 20 to 30 minutes.	

Activity	Dialogue for Critical Thinking
Use the questions below to direct the discussion: As leader during the fair board meeting role play, you will take on the role as the fair board chairperson. Your role is to keep things moving, insure that everyone has an opportunity to share their point of view, and encourage the youths to answer the following questions: 1. How serious is the animal rights/welfare concern? 2. Should we really be concerned about it? 3. What should we do? (Get advice from public on what action, if any, should be taken.) **Note:** It is helpful to take notes (on flip chart paper) so that everyone can see that their point of view is represented. The following strategies will stimulate discussion during the town meeting role play. 1. As the chairperson you may want to identify the specific concern the group is addressing and state the facts, again. 2. Focus on the positive at first. 3. Have all sides state their interpretation of the concern, for example: a. As an advocate of this position, how would you describe the problem? b. As someone who is not worried, how would you describe the concern? 4. When youths make statements, ask questions like: a. Can anyone add to that? b. How does that make you feel? c. How could you state that differently? To bring closure to the fair board meeting role play, ask the group to give the chairperson clear direction on what action to take. Describe the importance of compromise.	***Observing:*** △E: Youths will be observing (exploring) the varying points of view surrounding the animal rights/welfare issue. In addition, they will be communicating their assigned point of view on the issue.

Activity	Dialogue for Critical Thinking
Debrief from the role-play by asking the following questions to direct the discussion. (Debriefing is when youth explain how they felt about the role play). 1. How did each person feel about their role? 2. Did you think the roles described real points of view? 3. Did any one opinion win out? Why? 4. How does your personal opinion compare to the one you role-played? **Note:** Depending on how responsive and involved the group is in the role play, the instructor may wish to do the role play again at the next group meeting.	***Relating*** R: Youths will relate (reflect) their experiences in the role play by describing their feelings about their assigned roles. ***Comparing*** R: Youths will also reflect on their experiences by comparing their personal opinions to the roles they played. ***Apply*** A: Youths will apply their understanding about issues by describing what makes a concern an issue.

Role-Play Scenario

Read this before you begin the fair board meeting role play.

The fair board of your community (your instructor) has received complaints about the way animals are treated at the local fair. The fair board has called an open meeting of community members (the assigned roles) to find out what community members think about the concerns. Your goal for this meeting is to develop a plan of action addressing what to do about the concern.

You may choose:

Option 1

How to take action to improve this animal care problem.

Option 2

How to determine the seriousness of the concern.

List of Concerns

- Animals are often seen being roughly handled at the fair.
- Bruised carcasses from animals bought at fairs are common.
- Animals at the fair are lying in pens with unsanitary bedding.
- The animals seem crowded in pens, and don't have room to lie down.
- Many animals have been left tied and unattended. Some have been injured and some had to be destroyed at the fair.
- People who have animals at the fair have been involved in confrontations with animal activists. These confrontations have been televised.
- The local fair was exposéd on television. The reporter found some animals were not fed or watered regularly, and their bedding was not changed for days.

Role-Play Cards

Photocopy enough of these so that you will have enough role-play cards for the number of youths in your group. More than one person may play the same role, but try to have as many roles represented as possible.

Citizen A

Who are you?

You are an average citizen who has no background in animal production or agriculture.

Who do you blame?

You like to go to the fair and see the animals with your children. You are concerned that the animals not be mistreated. You want your children to have a positive experience at the fair.

What should be done?

You feel that the fair board should make sure that the animals are not being hurt. You don't believe in animal rights, but you think everything possible should be done to protect animals. You would like to learn more about how animals are raised.

Citizen B

Who are you?

You are an animal rights activist. You don't think animals should be used for anything. Ideally, you would like to see all animals set free and allowed to live as they want and deserve.

Who do you blame?

You think that the fair is taking advantage of the animals and using them to attract visitors and turn a profit. You also blame the producers of animals who don't care about the animals and are merely "factory farmers."

What should be done?

You think the fair should be closed to animal shows. The only thing at the fair should be a carnival and domestic displays such as arts and crafts or cooking.

Citizen C

Who are you?

You are a farmer and the past five generations of your family have been farmers. You raise livestock for a living and have children who show at the fair.

Who do you blame?

You blame the fair's problems on poor management, supervision, and education.

What should be done?

You think that all people showing at the fair should possess a basic knowledge of animal care and be tested on this knowledge. You also think that the fair should organize some way to monitor animal well-being.

Citizen D

Who are you?

You are a member of the media. You don't have a lot of background with animals but often cover local fairs. You have seen problems like the one being addressed at this meeting before.

Who do you blame?

You think that its OK to show animals, but that animals are often mistreated, especially when at the fair. You wonder if they are also mistreated at home.

What should be done?

You feel that someone should make sure that animals are not being mistreated at the fair and that the parents and teachers should take a more active part in making sure that animals are not mistreated.

Citizen E

Who are you?

You are a young person who raises and shows animals. You don't live on a farm, but have raised and shown animals for two years.

Who do you blame?

You blame the fair's problems on the lack of direction from the fair's management. There aren't any written policies and you aren't always sure what to do.

What should be done?

You think the fair board should have written policies and that someone should be responsible for carrying out these policies. You also feel that penalties should be imposed on people who don't follow the rules.

Citizen F

Who are you?

You are a member of the community who has livestock. You are experienced with animals and have a deep resentment against animal rights people.

Who do you blame?

You haven't noticed any problems and blame animal activists and do-gooders for stirring up trouble where there is none.

What should be done?

You feel that this meeting is unnecessary and that by holding the meeting, the fair board is giving in to the animal rights people.

Reference Resource Materials

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Siliker Labs
900 Maple Road
Homewood, IL 60430

Animal Well-Being
"The Heart of the Matter"
Jeff Goodwin, Ph.D.
Texas A&M University
Dallas County Extension
10056 Marsh Lane Suite B101
Dallas, TX 75229
(214) 904-3052

Animal Handling and Exhibition
Livestock Conservation Institute
Videos:
"Cattle Handling and Transportation"
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6414 Copps Ave., Suite 204
Madison, WI 53716
(608) 221-4848

"Livestock Handling and Transport"
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CAB International, Wallingford, UK
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Jeff Goodwin, Ph.D.
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10056 Marsh Lane Suite B101
Dallas, TX 75229
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Washington State University
Cooperative Extension
Pullman, WA 99164

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QUALITY ASSURANCE AND ANIMAL CARE
YOUTH EDUCATION PROGRAM

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